

BEFORE THE PUBLIC UTILITIES COMMISSION OF THE STATE OF CALIFORNIA

Order Instituting Rulemaking on the
Commission's own Motion Into
Competition for Local Exchange
Service.

R.95-04-043
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Order Instituting Investigation on the
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Service.

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REPORT ON THE 714 AREA CODE

Submitted in Compliance with California Public Utilities
Code Section 7937, CPUC decision 99-12-051, and Administrative Law Judge
Ruling Issued On January 18, 2000

CALIFORNIA PUBLIC UTILITIES COMMISSION
TELECOMMUNICATIONS DIVISION

Respectfully submitted
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REPORT ON THE 714 AREA CODE

CALIFORNIA PUBLIC UTILITIES COMMISSION TELECOMMUNICATIONS DIVISION

March 13, 2001

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EXECUTIVE SUMMARY

Like much of the country, California currently is experiencing a numbering crisis. From 1947 to January 1997, the number of area codes in this state increased gradually from 3 to 13. During the next three years, however, the number of area codes in California nearly doubled. By the end of 1999, California had 25 area codes statewide. The California Public Utilities Commission (CPUC) recently has implemented several measures intended to ensure efficient use of telephone numbers. Without these measures, the CPUC projects that 16 more area codes would need to be opened by the end of 2002, resulting in a statewide total of 41 area codes.

This study recounts the history of the 714 area code, from its creation in 1951 through the various splits to its present status, now covering part of Orange County in Southern California. This report should be viewed in a broader context than the facts pertaining solely to the 714 area code. The report evaluates the status of number availability in the 714 area code, and discusses the various state and federal policies which govern number use in California and nationwide. In addition, the report analyzes number use by carrier category and identifies what measures the CPUC can employ in the 714 and other area codes to improve efficiency of number use in order to avoid prematurely opening new area codes. Data is self-reported by the companies; the CPUC staff has not audited any 714 utilization data submitted for this study and report.

The utilization study sheds new light on the numbering crisis in the 714 area code. The data reveals that despite increasing demand for numbers, the 714 area code is not fully utilized. The study found that of the 7.7 million useable numbers in the 714 area code, approximately 3.9 million, or slightly more than half, presently are not in use. The data further establishes that the 714 area code possesses considerable room for growth, and thus, aggressive measures such as splits or overlays are not yet warranted in the 714 area code. The report further urges the CPUC to seek from the FCC authority to implement Unassigned Number Porting (UNP) as a means to more efficiently use numbers still available in the 714 area code.

This report is filed in compliance with CPUC Decision (D.) 99-12-051, and with AB 406, enacted by the California Legislature in the 1999 legislative session. (Chapter 99-809, 1999.) AB 406, codified as Public Utilities Code Section 7937, requires the CPUC to obtain historical telephone number use data from every telecommunications company in California. The CPUC's Telecommunications Division (TD) first obtained and analyzed data from the 310 area code in Los Angeles late in 1999, and produced a utilization report on 310 in March 2000. In November 2000, TD completed utilization reports covering the 415, 510, 818, and 909 area codes. This report on the 714 area code continues TD's analysis covering specific area code number utilization levels.

FINDINGS

The 714 area code contains approximately 7.7 million telephone numbers. These numbers are available to telecommunications companies that obtain the numbers from the North American Numbering Plan Administrator (NANPA),¹ and in turn, assign the numbers to their customers for their immediate use. Alternatively, companies may reserve numbers for future use, or retain numbers for some internal (administrative) use. Some companies provide blocks of numbers to resellers or "dealers", which then assign those numbers to customers. The FCC deems numbers that companies allocate to resellers to be "intermediate" numbers. In addition, each assigned number, after disconnection, must "age" during a transition period before assignment to the next customer. Many companies have inventories of numbers in the "aging" process. Finally, some numbers in this area code are not available for public use, as they have been set aside for emergency purposes, for technical network support, or for other reasons.

The FCC has determined that numbers in these five categories – assigned, administrative, reserved, intermediate, or aging – are unavailable, either because they are already in use or are designated for some present or future use. Of the 3.9 million

¹ NANPA is a role performed by NeuStar, Inc. The FCC chose NeuStar, formerly Lockheed Martin, to perform the functions of numbering administration and area code changes nationwide.

available numbers, 790,000 are available for use in the 714 lottery for companies seeking numbers, and 390,000 numbers have been set aside for donation to the 714 number pool.² Companies possess the remaining 2.7 million unused numbers. Wireline carriers, such as Pacific Bell and many competitive local exchange carriers, hold roughly 1.9 million available numbers, while wireless carriers and Type 1 carriers hold approximately 790,000 available numbers.

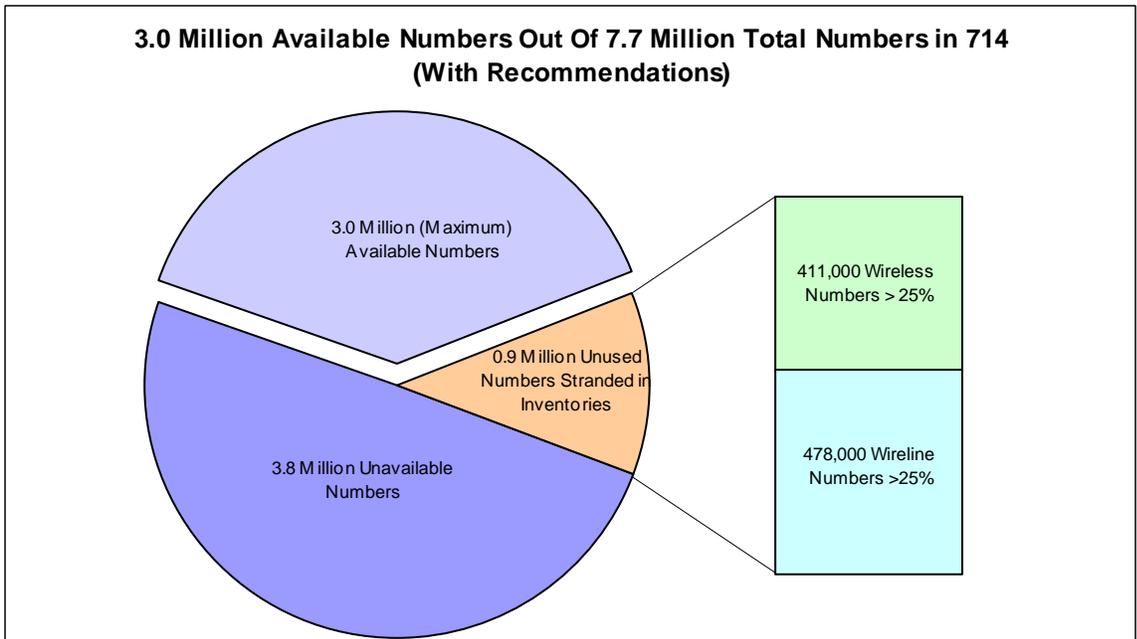
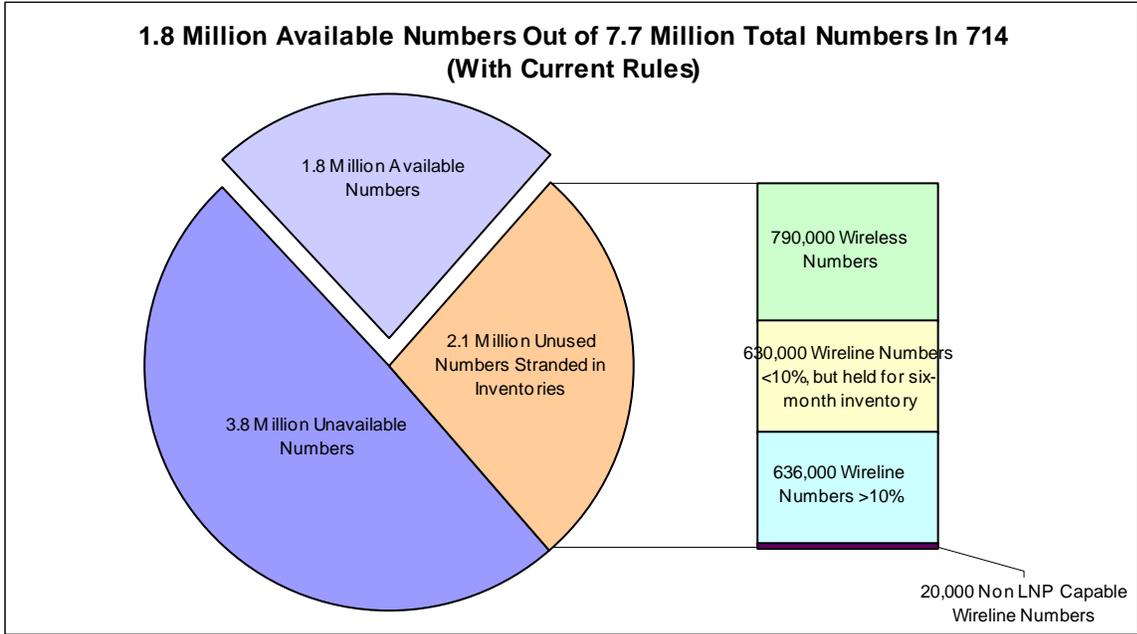
At the same time, the 714 study finds that under FCC rules, about 2.1 million numbers cannot be contributed to the 714 number lottery, nor can they be contributed to the 714 number "pool" for reassignment to other companies. The FCC has determined that wireless carriers do not have to participate in the pool at this time.³ In addition, the FCC has determined that the CPUC may only require wireline carriers to contribute to a number pool those blocks of 1,000 numbers that are 10% or less contaminated,⁴ meaning those blocks in which only 100 or fewer numbers are unavailable. However, wireline carriers may also keep a portion of the 10% or less contaminated blocks if those are needed for use within six months. Thus, 2.1 million numbers in the 714 area code are available only to the companies holding those numbers because they are held by wireless carriers, are in blocks that are more than 10% contaminated, or are in blocks 10% or less contaminated but kept for six-month inventory. The study further finds that of the 3.9 million numbers not in use, a maximum of 3.0 million could be made available to companies through pooling if a) the companies donated blocks with higher contamination levels to the future pool, and b) wireless carriers were required to participate in the 714 number pool. The first table below illustrates the current distribution of numbers. The

² Historically, telephone numbers have been allocated to companies in blocks of 10,000, as a complete prefix, such as (408)703-XXXX. Number pooling allows companies to obtain numbers in blocks of 1,000 or even fewer numbers.

³ At present, only wireline carriers are required to participate in number pooling. The FCC has granted most wireless carriers an extension of time, until November 2002, to implement the technology that will support number pooling. The FCC has permanently exempted paging companies from implementing the technology necessary to pool.

⁴ The percentage of numbers in use in a particular block of 1,000 numbers is referred to as the "contamination" level.

second table shows the distribution that would occur if all the recommendations in this report were implemented.



Finally, the study notes that companies identify 3.8 million numbers as unavailable. TD staff recommends specific measures the CPUC can employ to ensure that companies use those “unavailable” numbers more efficiently. Given the near doubling of the number of area codes in California, from 1996 to 1999, this vital public resource should be used as efficiently and effectively as possible. The CPUC and the telecommunications industry should strive to minimize the quantity of numbers left “stranded” in company inventories. The 714 Area Code Report recommendations are summarized in Appendix I.

CHAPTER ONE: OVERVIEW OF NUMBERING

A. Inefficient Use and Increasing Demand for New Numbers in California Is Causing Area Code Proliferation

California is currently experiencing an explosive demand for telephone numbers and area codes. The increased demand for numbers is due to many factors, including competition for local phone service, as well as the popularity of faxes, pagers, cell phones, internet services, etc. California's robust economy and the growth in the state's population also contribute to the increased demand for telephone numbers. This increase in demand is complicated by a number allocation system dating from the 1940's that is inefficient in today's competitive marketplace.

Prior to 1997, one phone company⁵ provided local telephone service to all customers in a particular area and new area codes were opened as the population grew. The number of California area codes rose steadily from three in 1947 to 13 in 1992, and stayed at that level until January 1997. During the next three years, however, the number of area codes in California nearly doubled. By the end of 1999, California had 25 area codes. The Telecommunications Act of 1996 sought to open competition for the local telephone service market and competitive local phone companies⁶ began to enter the marketplace, each requiring its own stock of numbers. The traditional system of number allocation was not designed to provide telephone numbers to more than one company.

In the past, when telecommunication companies needed telephone numbers to serve their customers, they received blocks of 10,000 numbers, i.e. prefixes. Because companies were assigned blocks of 10,000 numbers, they may have been assigned more numbers than they needed. For example, under this system, a company with only 500 customers would have received a 10,000 number block, the same quantity of numbers a company with 9,500 customers would receive. Thus, numbers are taken in these large blocks, creating an artificial demand for more numbers, which in turn fuels the need to

⁵ Today called the Incumbent Local Exchange Carrier (ILEC)

⁶ Today called Competitive Local Exchange Carriers (CLEC)

open more area codes. The need to assign 10,000 numbers is a practice from the past when one telephone company provided service to all customers in its territory. Today, with over 200 telecommunications companies in the state needing numbers to serve customers, and with the limited quantity of numbers available in each area code, this process is no longer an efficient way to allocate numbers.

The rise in demand for numbers combined with the inefficient allocation system for numbers has forced the rapid opening of new area codes throughout the state. Since 1997, the number of area codes in California has nearly doubled to 25. Unless major changes occur, the CPUC projects that 16 more area codes would need to be opened in California by 2002. With more and more companies needing numbers of their own, new area codes are not necessarily the best solution.

B. 714 History and CPUC Decisions

The 714 area code is a classic example of area code proliferation in California. Originally, the 714 area code was part of the 213 area code, one of the first three area codes created in California in 1947. The 213 area code originally covered all of southern California. The 714 area code was created in 1951 when it was split from the 213 area code. The 714 area code was reduced in size when the 619 and 909 area codes were split from 714 in 1982 and 1992, respectively. The 949 area code was split from the 714 area code in April 1998. Despite the splitting of this one area code into four area codes, the North American Numbering Plan Administrator determined the 714 area code would exhaust and that another area code would be necessary to provide numbers to the area. Most of the current 714 area code is contained within the Orange County and Los Angeles Metropolitan Statistical Areas (MSAs).

Despite the continuous splitting of the 714 area code to provide new numbers to the area, the North American Numbering Plan Administrator (NANPA) determined in 1997 that the 714 area code was running short of numbers. In response to the NANPA's determination that the CPUC must act to provide additional numbers for phone company use, the CPUC approved an area code overlay on March 18, 1998. In an overlay, a new area code is created covering the same geographical area as the existing area code. Under

CPUC and Federal Communications Commission (FCC) rules, all customers with numbers in both the new and old area codes are required to dial 1 plus the area code plus the seven digit number (known as 1 + 10 digit dialing) to reach any other number in either of the two area codes. The new area code was scheduled to be overlaid on the 714 area code on October 7, 2000, with mandatory 1 + 10 digit dialing to begin on July 7, 2000.

When the first overlay and 1 + 10 digit dialing were implemented in the 310 area code (located in the Los Angeles area) in April of 1999, customers expressed strong objections to the overlay and to the requisite 1 + 10 digit dialing. The CPUC halted the 310 overlay and ten digit dialing in September. In December of 1999, by Decision 99-12-051, the CPUC suspended all overlays previously approved, which included the overlay in the 714 area code. In that same decision, the CPUC required its Telecommunications Division (TD) staff to study number use to determine the quantity of available, unused numbers in the 714 area code. This report fulfills that requirement.⁷

1. Monthly Lottery Allocates Prefixes

For those area codes nearing number exhaust, the CPUC has instituted a lottery process to fairly allocate the remaining prefixes among phone companies when demand exceeds supply. The 714 lottery began in December 1998. Currently, the CPUC distributes three prefixes (two initial and one growth⁸) in the monthly 714 lottery. Each company submits applications for initial and growth prefixes to the NANPA Code Administrator. If more applications are received than can be satisfied in that month, the first applicants chosen by random drawing are assigned a prefix and the remaining applicants are placed on a priority list and receive prefixes in one of the following months' lotteries in the order they were drawn. Once every company requesting a prefix

⁷ In addition, the California state legislature enacted Section 7937 of the California Public Utilities Code. Effective on January 1, 2000, Section 7937 requires the CPUC to prepare and submit to the Legislature, by July 1, 2001, a study of the telecommunications industry's usage rates of telephone numbers in all California area codes. This report also complies with that legislative requirement with respect to the 714 area code.

⁸ A company's request for its first prefix in the rate center is considered an initial request; requests for additional prefixes are considered growth requests.

has received one, a new drawing is held and additional companies are eligible to receive prefixes. Twenty-nine prefixes have been allocated in the 714 area code through this process between January 1, 2000 and December 31, 2000.

C. CPUC Efforts to Resolve Area Code Proliferation

Recognizing the substantial social and economic burdens associated with constant area code changes, the CPUC has taken steps to resolve the numbering crisis.

Responding to widespread public outcry over the proliferation of new area codes, the CPUC suspended, beginning in December 1999, all plans for new area codes previously approved. In July 2000, the CPUC adopted number conservation measures, including establishing number pooling trials, fill rates, and sequential numbering.

1. Number Pooling

The CPUC, with FCC approval, has begun pooling trials in four area codes, in order to boost the efficiency of phone number allocation. In addition, the CPUC has ordered pooling trials for ten other area codes during 2001.

Number pooling allows telephone companies to receive numbers in smaller blocks than the traditional 10,000 numbers, enabling multiple providers to share a prefix, thereby utilizing this limited resource much more efficiently. The technology that enables the network to support the assignment of smaller blocks is referred to as Local Number Portability or LNP.² LNP was originally mandated by the FCC as a means to enable customers to retain their telephone numbers when they switch telephone service to another local provider. This same platform is utilized for number pooling. The FCC had required all wireline carriers to become LNP-capable by the end of 1998 in the top 100 Metropolitan Statistical Areas (MSAs) in the country. Thirteen of the top 100 MSAs are located in California; the 714 area code is located in the Orange County and Los Angeles Metropolitan Statistical Areas.¹⁰

² See Chapter Three of this report for a discussion of LNP.

¹⁰ FCC's Opinion and Order on Telephone Number Portability FCC 97-74, issued March 6, 1997

Though LNP technology has existed for several years, the FCC later granted cellular and PCS companies an extension of time until November 2002 to become LNP-capable. The FCC gave paging companies a permanent exemption from the LNP requirement.¹¹ Thus, at this time, only wireline carriers¹² can participate in number pooling. In the area codes with number pooling, wireline carriers participate in pooling and wireless carriers participate in the lottery. In the remaining area codes in rationing, all phone companies participate in the lottery.

The CPUC has been aggressively setting up number pools. In January 2000, the CPUC by an Assigned Commissioner's Ruling set a pooling trial for the 714 area code, which began on September 29, 2000. All LNP-capable companies with numbers in 714 were required to donate 1,000-number blocks to the pooling administrator. Under the number pooling program, all LNP-capable carriers receive numbers in blocks of 1,000 in the 714 area code on an as-needed basis. There is no rationing process in pooling and the blocks received can be put into service almost immediately upon receipt. All non-LNP capable carriers continue to receive numbers in blocks of 10,000 through the monthly lottery allocation process. 46 blocks of 1,000 numbers were assigned to pooling carriers and 621 blocks of 1,000 numbers remain in the pool as of December 31, 2000. Additionally, the 39 prefixes (390,000 numbers) set aside for use in the number pool remain unused.

2. Improved Number Inventory Management

While the pooling trials have improved the efficiency of the distribution of numbers to companies, companies have not had strong incentives to efficiently manage the numbers already allocated to them. Thus the CPUC ordered companies to improve number inventory management with measures including rules on fill rates and sequential numbering.

¹¹ Cellular companies, PCS companies, and paging companies comprise the wireless category.

¹² ILECs and CLECs

In July 2000, the CPUC issued Decision 00-07-052, which extended number conservation measures adopted in the 310 area code to other area codes within California. These number conservation measures include the following:

- Companies are required to return to the NANPA any prefix held for more than six months without being used.
- “Imminent exhaust criteria” are established in all area codes with lotteries or pooling trials. In each rate center in which companies request additional numbers, they must as a prerequisite supply NANPA with a form demonstrating they will be out of numbers within three months.
- Companies must satisfy a minimum 75% fill rate requirement before being eligible to request a growth code in any area code in rationing and before being eligible to receive a thousand-block through the number pool. Companies must assign numbers in thousand block sequence, moving to the next block only once a 75% fill rate has been attained in the prior block.

TD anticipates these policies will potentially free more numbers for use in number pooling, to be allocated through the lottery, or to be otherwise used by companies. Indeed, these measures together with the effects of number pooling have already achieved some positive effects. For example, since the CPUC extended the 75% fill rate and imminent exhaust rules to all area codes, including 714, CPUC staff has observed that the demand for growth prefixes in each month’s lottery has declined. As of December 31, 2000, there were 62 NXX codes available for lottery assignment in the 714 area code, as well as the 39 NXX codes set-aside for number pooling.

3. CPUC Efforts at Federal Level

The FCC has exclusive jurisdiction over numbering in the United States. Therefore, the CPUC’s number conservation policies (pooling, fill rates, and sequential numbering) are governed by the FCC’s delegation of authority to the states. In recognition of the severity of the numbering crisis in California, the CPUC has aggressively petitioned the FCC for additional authority. As a result, the FCC has

delegated authority to plan and implement area code changes, as well as authority to implement number conservation measures.

a. Authority Regarding Pooling

On April 26, 1999, the CPUC filed a petition with the FCC requesting authority to institute number pooling trials and other number conservation measures within the state to better manage this public resource. On September 15, 1999, the FCC granted that petition, allowing the CPUC to institute mandatory number pooling on a trial basis, deploying it sequentially in one MSA at a time. When the FCC granted the CPUC the authority to deploy various numbering resource optimization strategies, including the authority to institute thousand-block number pooling trials, it also clarified that California's authority will be superseded by future national measures adopted by the FCC.

On March 31, 2000, the FCC released the Numbering Resource Optimization Report and Order and Further Notice of Proposed Rulemaking (first NRO Order).¹³ The first NRO Order sets forth rules for defining numbers, forecasting, tracking and auditing companies' use of numbers, and for conservation measures associated with number usage, including but not limited to number pooling. The definitions for numbers and timelines for aging and reserved numbers that were adopted in that order have been incorporated into the utilization data contained herein.

With the release of the first NRO Order, the FCC adopted a number of administrative and technical measures that will allow it to monitor more closely the way numbering resources are used and to promote more efficient use of numbering resources. In particular, the FCC adopted a nationwide system for allocating numbers in blocks of one thousand, rather than ten thousand, wherever possible, and announced its intention to establish a plan for national rollout of thousands-block number pooling.

Because the FCC recognized that state thousand-block number pooling trials underway might not conform to the national standards set forth in the first NRO Order,

¹³ Report and Order and Further Notice of Proposed Rulemaking, CC Docket No. 99-200 FCC 00-104 (released March 31, 2000).

the FCC gave state commissions until September 1, 2000 to conform their thousands-block number pooling trials to the national framework. One requirement imposed in California which differs from the national standards is the requirement that companies meet a 75% fill rate in each block before they may receive an additional block from the pooling administrator. The CPUC recognized the 75% fill rate as a critical factor in the success of the 310 pooling trial and petitioned for a waiver of compliance with the national rules. On August 31, 2000, the FCC issued an order granting the CPUC authority to continue to use its pooling rules until the FCC decides on the merits of the petition, or until December 31, 2000, whichever occurs sooner. This allows California to continue applying the 75% utilization rate in its number pooling efforts.

On December 29, 2000, the FCC issued its Second Report and Order on Number Resource Optimization. In the second NRO Order, the FCC ruled on California's Petition for Waiver, concluding that the CPUC may continue to use its utilization thresholds subject to parameters set in this order (when FCC thresholds exceed California's, California must migrate to the more stringent utilization thresholds). The FCC also declined to adopt a transition period between the time that covered CMRS carriers must implement LNP and the time they must participate in any mandatory number pooling.

The first NRO Order further constrains the CPUC by concluding that the rollout of thousand-block number pooling should first occur in area codes that are located in the largest 100 MSAs. In its comments prior to the release of the first NRO Order, the CPUC had argued that California would be precluded from exploring whether number pooling could alleviate the crises for number resources in many parts of the state that are located outside the top 100 MSAs. The CPUC believes the FCC should delegate authority to the states to order deployment of LNP. This grant of authority to California would make pooling possible throughout the state.

b. Authority Regarding Technology-Specific Area Codes

Currently, state commissions are constrained by the FCC from establishing an area code specifically for wireless telecommunications services. On April 26, 1999, the CPUC filed another petition with the FCC requesting that the CPUC be granted authority to create service-specific or technology-specific area codes. In the 714 area code, there are 25 wireless carriers holding 200 prefixes. If the CPUC were allowed to create a separate area code for those companies, the 200 prefixes in the 714 area code could be reassigned to other phone uses, thus prolonging the life of the existing area code. To date, the FCC has not acted on the CPUC's petition. In the Second Report and Order, the FCC asks for further comments on technology specific or non-geographic area codes.

On September 28, 2000, Governor Davis signed into law Senate Bill (SB) 1741, authored by Senator Bowen. SB 1741 requires the CPUC to request authority from the FCC to require telephone corporations to establish technology-specific area codes based on wireless and data communications, and to permit 7-digit dialing within both that technology-specific area code and the underlying pre-existing area code or codes. The bill requires the CPUC to use any authority so granted unless it makes a specified finding that there is reason not to do so. The legislation also prohibits the CPUC from implementing any authority granted by the FCC in a manner that impairs number portability. The Petition that the CPUC filed with the FCC in April 1999 fulfills the technology-specific area code requirement set forth in the bill.

The bill also prohibits the CPUC from approving new area codes unless a telephone utilization study has been performed and all reasonable telephone number conservation measures have been implemented. This utilization study fulfills the telephone utilization study portion of SB 1741.

4. Utilization Studies

Before requiring the residents and businesses of the 714 area code to undergo another area code change, the CPUC recognized the necessity of determining the amount of telephone numbers that are in use and yet to be used. To that end, the CPUC instituted

a 714 utilization study and required companies to provide usage data to the CPUC as of April 30, 2000. The TD contracted with NeuStar to collect the data. NeuStar submitted the aggregated data in its entirety to TD on August 18, 2000. A list of the companies who have been allocated numbers in the 714 area code, the study parameters and filing requirements appear in Appendix A.

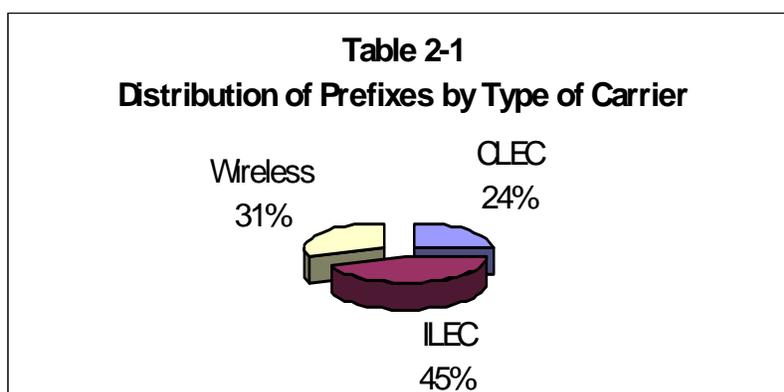
CHAPTER TWO: 3.9 MILLION UNUSED NUMBERS IN THE 714 AREA CODE

Of the 7.7 million numbers in the 714 area code, companies hold 6.5 million numbers. The other 1.2 million numbers have yet to be assigned to companies. The CPUC's utilization study found that of the 6.5 million numbers held by companies, 2.7 million remain unused in their inventories. Therefore, 3.9 million numbers in the 714 area code remain unused. A portion of these unused numbers can be made available for use by all companies, either through pooling or through the monthly lottery allocation process. In addition, companies have reported 3.8 million numbers as unavailable. A portion of these unavailable numbers can be used more efficiently if the recommendations contained in this report are implemented.

A. The Scope of the Utilization Study

1. Distribution Statistics of Prefixes

The CPUC asked 55 companies, holding 654 prefixes (6.5 million numbers) in the 714 area code, to report their utilization data with a reporting cut-off date of April 30, 2000. Table 2-1 shows the distribution by incumbent local exchange carriers (ILECs), competitive local exchange carriers (CLECs)¹⁴, and wireless carriers in 17 rate centers and one special code area.¹⁵



¹⁴ Wireline carriers include both ILECs and CLECs.

¹⁵ The one special code area is used for directory assistance, i.e. a special use prefix described in Section D.1.c of this chapter.

2. Companies Reporting

Of the 55 companies in the 714 area code, 50 submitted utilization data. Although one company submitted data too late to be included in the summaries provided by NeuStar, TD has considered this late filer in its analysis.

3. Non-Reporting Companies

The remaining five companies holding nine prefixes in the 714 area code are no longer offering service in the 714 area code or failed to provide utilization data.

CRL Network Services, Inc. and Preferred Networks, Inc. informed NeuStar that they were returning all their prefixes in the 714 area code. NANPA has confirmed that CRL and Preferred Networks have returned all four of their 714 prefixes.

The other three companies, holding five prefixes, failed to provide utilization data. Table 2-2 summarizes this information.

Table 2-2
Non-Reporting Companies

<u>Company</u>	<u>OCN</u>	<u>Rate Center</u>	<u>Prefix</u>
PageCell, Inc. – CA	6586	Anaheim	819
PagePrompt, Inc.	6588	Anaheim	275
PagePrompt, Inc.	6588	Anaheim	298
Paging Dimensions	6869	Anaheim	303
Paging Dimensions	6869	Anaheim	344

Administrative Law Judge’s Ruling Ordering Carriers to Submit Utilization Data, dated June 15, 2000, ordered twelve delinquent carriers to submit utilization data within 20 days or be subject to sanctions. PageCell, PagePrompt, and Paging Dimensions were listed among the twelve companies.

In addition, the CPUC issued its first report on number utilization in the 310 area code on March 16, 2000. After the report’s issuance, the CPUC issued Administrative Law Judge’s Ruling Ordering Carriers to Submit Utilization Data, dated May 11, 2000.

It should be noted that PageCell, PagePrompt, and Paging Dimensions were listed in that ruling as companies who did not submit utilization data for the 310 area code.

Recommendation for Data Submittal

- *The CPUC should direct the NANPA to withhold issuing prefixes to PageCell, PagePrompt, and Paging Dimensions until the required information is submitted. The CPUC should also consider levying fines or other penalties for failure to comply. If these prefixes are not being used for customers, the CPUC should direct the NANPA to reclaim the prefixes as soon as possible.*

B. 3.9 Million Numbers Available in the 714 Area Code

The 714 area code has 3.9 million unused numbers. Of these unused numbers, TD found that companies held 2.7 million numbers in their inventories.¹⁶ These numbers held in inventory are currently not used for any purpose but held in anticipation of future need. The remaining 1.2 million unused numbers are not yet assigned to companies: 390,000 numbers have been set aside for number pooling¹⁷ and 790,000 numbers are available for allocation in the 714 monthly lottery. The breakdown of available numbers is shown in the table below.

¹⁶ A detailed break-down of the available 2.7 million numbers is shown in Table B-1 in Appendix B.

¹⁷ Currently, a total of 1,057 thousand-number blocks are available for the 714 number pooling trial. The 1,057 blocks include 390,000 numbers from the 390 blocks that were set aside by the CPUC as well as 667 blocks donated by wireline carriers.

Table 2-3
Summary of Available Numbers

Wireline Carriers	1,928,722
Wireless Carriers	654,447
Type 1 Carriers ¹⁸	<u>135,555</u>
Total Available/Unused Numbers Held by Carriers	2,718,724
Numbers Set Aside for the 714 Pooling Trial	390,000
Numbers Available for the 714 Lottery	<u>790,000</u>
Total Available Numbers in the 714 Area Code	3,898,724

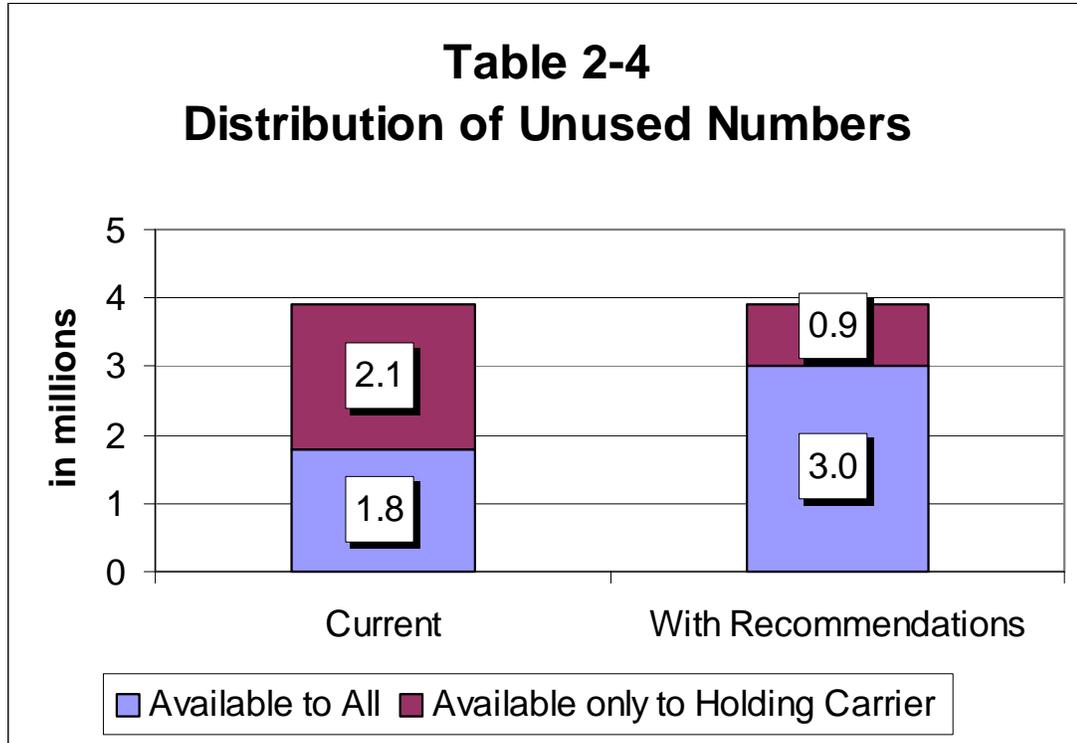
Not all of the 3.9 million unused numbers are immediately available to every company that wants numbers. Of the 3.9 million, a maximum of 1.8 million numbers¹⁹ is available to all companies via the pooling trial or the lottery. The remaining 2.1 million numbers are only available to the companies who hold them. As shown in the table below, the CPUC could shift the availability of numbers from one category to another by adopting the recommendations²⁰ in this report. Of the 3.9 million unused numbers, those actions could result in making a maximum of 3.0 million numbers²¹ available to all companies with the remaining 0.9 million numbers available to the companies who hold them.

¹⁸ Type 1 carriers are not considered wireline or wireless companies. Type 1 numbers are programmed in the wireline company's end office, but are used by a wireless company.

¹⁹ 1.8 million numbers are comprised of a maximum of 667,000 donated by companies, plus 390,000 initially set aside by the CPUC for pooling, plus 790,000 available through lottery.

²⁰ Recommendations dealing with receiving authority from the FCC to increase contamination threshold rates (25%) for pooling purposes, recovering blocks from special use codes, and recovering unused numbers from non-LNP capable carriers and Type 1 carriers as described later in this report.

²¹ See Table B-2 in the appendix for a detailed breakout of the 3.0 million numbers.



Current technology requires a company to be LNP-capable in order to donate numbers for another company to use. All wireline carriers in the 714 area code are required to be LNP capable.²² Wireline carriers hold 1.9 million unused numbers in the 714 area code. In order for the unused numbers to be retrieved from company inventories, the FCC requires these unused numbers to be retrieved from blocks which are 10% or less contaminated.²³ 1.3 million of wireline companies' 1.9 million unused numbers are contained in 1,297 thousand-blocks held by LNP-capable carriers and are 10% or less contaminated. However, not all of these 1.3 million numbers can be retrieved from companies' inventories because companies need to have enough numbers to meet anticipated future need.²⁴ Both the CPUC and the FCC have determined that six-

²² Although all wireline carriers are required to be LNP capable, one wireline carrier in the 714 area code remains non LNP-capable.

²³ 10% or less contaminated means that out of 1000 numbers in a block, 100 numbers or less have been classified as unavailable.

²⁴ Future need may include serving new customers or offering new services.

months of inventory is a reasonable quantity to hold for future use. Of these 1,297 thousand-blocks eligible for donation, 630 blocks remain with companies for their six-month inventory while 667 blocks are now available for pooling.²⁵

The remaining 656,000 of the 1.9 million unused numbers cannot be retrieved, either because the numbers are in blocks greater than 10% contaminated or because they are in non LNP-capable blocks. However, companies can immediately use these numbers to provide service to their customers or meet other needs. Wireline carriers hold 636,000 numbers in blocks that are more than 10% contaminated.²⁶ The one non-LNP capable wireline carrier holds 10,000 of the 1.9 million unused numbers. Special use codes²⁷ are generally not LNP capable and constitute 10,000 of the 1.9 million unused numbers.

Wireless carriers hold 654,000 unused numbers in the 714 area code. Of these unused numbers, 300,000 are in blocks that are 10% or less contaminated, while 354,000 numbers are in blocks greater than 10% contaminated. Until wireless carriers become LNP-capable in November 2002, none of these numbers may be reallocated to other companies. In the interim, wireless carriers may assign these numbers to their own customers.

C. Analysis of “Available” Numbers

1. Analysis of Wireline Carriers’ Contamination Rates

The CPUC requires each company participating in the 714 number pool to donate blocks that are 10% or less contaminated, excluding those retained for the six-month inventory.²⁸

²⁵ As of December 12, 2000, 34 blocks have been assigned to companies with 633 blocks available for assignment.

²⁶ See Table B-1 in Appendix B. The 636,000 is comprised of 71,520 which are in blocks that are 10-15% contaminated, 59,099 from 15-20% contaminated, 27,275 from 20-25% contaminated, and 477,923 numbers which are in blocks that are more than 25% contaminated. Later in this chapter, TD recommends additional steps that can be implemented to make more of the 636,000 numbers available for number pooling.

²⁷ For a discussion of numbers held for special uses, see Section D.l.c of this chapter.

²⁸ INC’s Thousand Block (NXX-X) Pooling Administration Guidelines, dated January 10, 2000, state that

TD analyzed the 714 utilization data to determine the availability of numbers within blocks if different contamination thresholds were employed in the number pool. The following table summarizes available numbers by contamination rates by rate center for wireline carriers.

Table 2-5
Available Numbers by Percentage Contamination for LNP Capable Wireline Carriers

	<u>0%</u>	<u>>0% - 10%</u>	<u>>10% - 15%</u>	<u>>15% - 20%</u>	<u>>20% - 25%</u>
ANAHEIM	97,000	74,125	15,022	11,229	3,171
BREA	37,000	18,541	3,545	838	799
BUENA PARK	41,000	29,098	2,666	3,236	757
CAPISTRANO VALLEY					
CYPRESS	48,000	29,163	4,428	6,433	1,546
FULLERTON	63,000	42,881	4,405	1,600	2,335
GARDEN GROVE	66,000	27,280	3,517	6,567	794
HUNTINGTON BEACH	81,000	52,383	6,162	4,898	3,844
IRVINE	0	0	0	0	0
LAGUNA BEACH					
ORANGE	59,000	49,792	9,690	4,140	4,660
PLACENTIA	45,000	36,703	6,209	1,600	2,336
SADDLEBROOK VALLEY					
SANTA ANA	147,000	63,010	11,442	12,936	3,929
SILVERADO	27,000	8,892	0	0	761
WESTMINSTER	48,000	16,417	2,641	3,209	2,343
YORBALINDA	50,000	15,685	1,793	2,413	0
GRAND TOTALS	809,000	463,970	71,520	59,099	27,275

The first two columns of Table 2-5 show the potential numbers available to the pooling trial, except for those numbers kept for companies' six-month inventory, under current rules. Available numbers in one rate center cannot be used in another rate center. Table 2-5 shows that all rate centers except Capistrano Valley, Irvine, Laguna Beach, and Saddlebrook Valley have available numbers that companies could donate to the pool. Wireline carriers do not hold any prefixes in Capistrano Valley, Laguna Beach or

carriers should donate specified thousand blocks.

Saddlebrook Valley.²⁹ The Irvine rate center is comprised of only one prefix: a special use prefix used for Emergency Preparedness.

The last three columns of Table 2-5 capture available numbers in blocks that are greater than 10% contaminated but no more than 25% contaminated. Under the current 714 number pool rules, companies retain thousand number blocks that are more than 10% contaminated. Increasing the contamination rate threshold from 10% to 25% would potentially free up an additional 158,000³⁰ numbers for use in the number pool. TD cautions that although Table 2-5 shows potential results from increasing allowable contamination levels, further analysis and input from the industry may be necessary to determine accurately the quantity of additional numbers that can be added to the pool while still leaving companies with a six-month inventory.

As shown by Table 2-5 and also shown graphically in Table B-3 of Appendix B, most rate centers have available numbers from blocks of differing contamination levels up to 25%. The table shows that if the contamination level was increased from 10% to 25%, more unused numbers exist in most rate centers that potentially can be donated to the pool.

Recommendation from Block Contamination Analysis of Wireline Carriers

- *The CPUC should petition the FCC to increase the contamination level for pooling to 25%. If the FCC grants the petition, the CPUC should increase the maximum contamination level of donated blocks from 10% to 25% for all LNP capable carriers.*

2. Analysis of Wireless Carriers' Contamination Rate

Under current FCC rules, cellular and PCS companies are exempt from number pooling until November 2002 when they must become LNP-capable. The FCC has indefinitely exempted paging companies from the LNP requirement. Table 2-6 shows available numbers in differing contamination levels held by wireless carriers. Wireless

²⁹ Only wireless carriers hold prefixes in these three rate centers.

³⁰ Additional numbers from the last three columns of Table 2-5: 71,520+59,099+27,275=157,894

carriers hold 300,000 available numbers in blocks which are 10% or less contaminated as shown in the first two columns of Table 2-6. Wireless carriers also have 48,000 available numbers in blocks with contamination levels greater than 10% but less than 25% as indicated by the last three columns of Table 2-6. Of these 348,000 unused numbers held by wireless carriers, TD estimates that paging companies hold 132,000.³¹ Staff is investigating whether there are methods to make some of these 132,000 unused numbers available to other companies despite the FCC's exemption of paging companies from the LNP requirement.

Table 2-6
Available Numbers by Percentage Contamination for Wireless Carriers

	0%	>0% - 10%	>10% - 15%	>15% - 20%	>20% - 25%
ANAHEIM	135,000	53,541	13,129	20,466	12,452
BREA	7,000	950	0	0	0
BUENA PARK					
CAPISTRANO VALLEY	0	0	0	0	0
CYPRESS					
FULLERTON	19,000	0	0	0	0
GARDEN GROVE					
HUNTINGTON BEACH	11,000	921	899	0	0
IRVINE					
LAGUNA BEACH	0	0	0	824	0
ORANGE	0	0	0	0	0
PLACENTIA					
SADDLEBROOK VALLEY	0	0	0	0	0
SANTA ANA	29,000	5,840	0	0	0
SILVERADO					
WESTMINSTER	25,000	3,996	0	0	0
YORBALINDA	9,000	0	0	0	0
GRAND TOTALS	235,000	65,248	14,028	21,290	12,452

Because the FCC has granted wireless carriers an extension of time to implement LNP, no wireless carriers serving the 714 area code have implemented LNP. Thus,

³¹ See Table B-2 of Appendix B.

wireless carriers cannot participate in number pooling at this time, resulting in 348,000 unused numbers in blocks between 0% to 25% contaminated in the 714 area code.

Recommendations from Block Contamination Analysis for Wireless Carriers

- *When cellular and PCS companies become LNP capable in November 2002, the CPUC should direct those wireless carriers to donate to and participate in the pool.*
- *The CPUC should adopt a 25% contamination threshold for donated blocks from wireless carriers to the pool.*
- *The CPUC should solicit comments on the feasibility of paging companies becoming LNP capable and participating in pooling, as well as other methods of reducing the number of stranded numbers held by paging companies.*
- *If deemed feasible, the CPUC should petition the FCC to rescind the paging companies' indefinite exemption on becoming LNP capable.*

3. Potential Block Contamination Abuses

When blocks are slightly more than 10% contaminated, those blocks cannot be donated to the pool. TD found instances where companies contaminated blocks just above 10%. The CPUC's rules on sequential numbers and fill rate practices promulgated in Decision 00-07-052 are designed to prevent this problem from occurring in the future. Fill rates mitigate contamination by requiring companies to use contaminated blocks up to 75% before they can receive additional blocks. Sequential numbering minimizes contamination by requiring companies to begin assignment in the next thousand block only after a 75% fill rate has been attained in the prior block. Where companies possess significant available numbers in a given rate center, these two efficiency measures could prevent the opening of new blocks or prefixes.

Companies reported utilization data as of April 30, 2000. The sequential numbering and fill rates decision was issued in July 2000. Therefore, TD does not expect carriers to continue contaminating blocks unnecessarily.

Recommendations for Block Contamination Issues Affecting All Companies

- *The CPUC should monitor compliance with its fill rate and sequential numbering policies through future number utilization filings and audits.*
- *The CPUC should establish penalties for non-compliance with fill rate and sequential numbering policies adopted in Decision 00-07-052.³²*

4. Reclamation of Prefixes

Decision 00-07-052 directed companies to return prefixes that are held unused for more than six months. As shown in Appendix B-1, wireline carriers and wireless carriers hold 823,000 unused numbers and 235,000 unused numbers, respectively, in the 0% contaminated blocks. Of these 0% contaminated blocks, 270,000 numbers are in 27 whole prefixes³³, i.e. spare prefixes, while 788,000 numbers are scattered throughout many different prefixes. The following table shows the breakdown between wireless and wireline carriers.

Table 2-7
Breakdown of Numbers in 0% Contaminated Blocks

	Avail. Nos. in <u>0% Contain Blocks</u>	Avail. Nos. in <u>Spare Prefixes</u>	Avail. Nos. in <u>Differing Prefixes</u>
Wireline Carriers	823,000	170,000	653,000
Wireless Carriers	235,000	<u>100,000</u> 270,000	<u>135,000</u> 788,000

As shown above, 270,000 numbers in 27 prefixes can possibly be reclaimed if not used within six months. However, as a result of the FCC’s March 31, 2000 (first) NRO order, the NANPA no longer has sole authority to reclaim unused prefixes. The FCC granted authority to state regulatory commissions to investigate and determine whether

³² See Chapter 1 for the discussion on Decision 00-07-052.

³³ This includes the 5 prefixes held by the companies who did not report utilization data.

code holders have activated prefixes within the allowed time frames, and directed the NANPA to abide by the state commission's determination to reclaim a prefix if the state commission is satisfied that the code holder has not activated the prefix within the time specified in the first NRO order.³⁴ Substantial cooperation between the CPUC and the NANPA will be required in order for the CPUC to exercise this new authority and determine whether a prefix should be reclaimed. Furthermore, the NANPA must still perform the mechanical steps to reclaim prefixes once the CPUC directs the NANPA to reclaim a prefix.

NANPA has provided to the CPUC a list of companies that have failed to report whether their assigned prefix(es) have been placed in service. The CPUC issued Assigned Commissioner's Ruling Requiring Carriers to Comply With NXX Code Reclamation Rules, dated December 21, 2000. In this ruling, the CPUC instructed the delinquent companies to comply immediately. Companies are to inform the CPUC that the prefix(es) have been placed in service or returned, the company was incorrectly included in NANPA's delinquent list, or the reasons why the prefix(es) have not been placed in service. The CPUC will review the reasons and make a determination on whether the prefix(es) must be returned or reclaimed by NANPA or whether an extension of time is to be granted to the company to place the prefix(es) in service. Any delinquent company that fails to comply will be subject to penalties and sanctions.

D. Analysis of 3.8 Million "Unavailable" Numbers

In the following sections, the TD recommends a series of policies designed to require companies to use unavailable numbers more efficiently. These policies would potentially free more numbers for use in the pool, to be allocated through the monthly lottery, or to be otherwise used by companies.

Companies report that 3.8 million numbers in the 714 area code are either assigned to customers or are used by companies for reserved, administrative, intermediate and aging purposes. Assigned numbers are those numbers that are currently being used by

³⁴ FCC 00-104, Paragraphs 237, 238, and 241

customers or equipment. Companies commonly refer to these numbers as “unavailable”. Unavailable numbers include not only those actually in use by customers, but also the following categories:

- *Reserved numbers – Numbers that are reserved in blocks for future use by specific customers;*
- *Administrative numbers – Numbers that companies use for their own internal use;*
- *Intermediate numbers - Numbers that are made available for use by another telecommunications carrier or non-carrier entity for the purpose of providing telecommunications service to an end user or customer; and*
- *Aging – Numbers from recently disconnected service which are not reassigned during a fixed interval.*

1. 3.1 Million Assigned Numbers

In the 714 area code, 3.1 million assigned numbers exist with 2.0 million assigned to customers by wireline carriers and 1.1 million assigned to customers by wireless carriers. The percentage of assigned numbers to total numbers held by companies is shown in the table below.

Table 2-8
Assigned Numbers to Numbers Held by Companies (in millions)

	<u>Assigned Numbers</u>	<u>Total Nos. Held by Companies</u>	<u>Percentage</u>
Wireline Carriers	2.0	4.5	44.1%
Wireless Carriers	1.1	2.0	54.9%

a. Non-Working Wireless

Non-Working wireless describes numbers assigned to wireless customer equipment, but which are not yet working. These numbers are considered a sub-category of assigned numbers. For example, wireless carriers sometimes pre-package a cellular telephone with an assigned telephone number for sale to customers. Although the

number is assigned, it will remain inactive until a customer purchases the telephone. (There are no non-working wireless numbers reported for this area code). While the quantity of non-working wireless numbers reported generally is low, this sub-category of assigned numbers could increase because there are no restrictions on the number of days that a wireless company can hold these numbers, causing numbers to remain idle for an unspecified period.

The CPUC should consider several options to improve inventory management of non-working wireless numbers. One option is for the CPUC to require companies to return these numbers to the unassigned category after 180 days (similar to the requirement the FCC has established for reserved numbers). Since pre-packaged equipment with non-working assigned numbers is often located in various retail outlets, another option is for the CPUC to require companies to maintain inventory records of all such retail/wholesale equipment with the associated numbers assigned and to require regular (weekly/monthly) updating of these inventory records.

Recommendations for Treatment of Non-Working Wireless

- *Non-working wireless numbers should be treated as reserved numbers and limited to 180 days, after which they should become available for assignment to customers.*
- *Companies should be required to maintain and update regularly the inventory records of all equipment assigned non-working wireless numbers along with the number assigned, and to submit such records to the CPUC upon request.*
- *The CPUC should continue to monitor non-working wireless numbers in the near term by reviewing future utilization filings, and should include this category of numbers in any audits conducted of wireless carrier number use.*

b. Eliminating Interim Number Portability Releases Numbers for Reallocation

Interim Number Portability (INP) is the ability to move telephone service from one service provider to another using Remote Call Forwarding (RCF), Direct Inward

Dialing (DID), or equivalent means.³⁵ Prior to the implementation of permanent LNP, companies entered into INP arrangements to enable the transfer of customers from one company to another. Under these INP arrangements, two telephone numbers are associated with each customer. LNP eliminates the need for two telephone numbers for each customer when the customers change companies because customers can take their numbers with them.

Since the 714 area code is included in one of the top 100 MSAs in the nation, all wireline carriers should be LNP-capable.³⁶ The only companies that reported INP numbers were ILECs. They reported a total of 333 numbers in the 714 area code. Since all the reported INP numbers were from ILECs and none were from their competitors, it does not appear that INP exists in the 714 area code to facilitate competition for customers. Thus, TD questions why any INP numbers exist in this area code. Switching to LNP technology and eliminating INP will free up half of the 333 numbers that are currently dedicated to INP.

Recommendations for INP-Related Conservation Measures

- *The CPUC should require companies to transition from INP to LNP in the 714 area code and implement a monitoring mechanism to ensure compliance.*
- *The CPUC should adopt a schedule for transitioning INP arrangements to LNP in all other California area codes.*

c. Expanded Use of the 555 Prefix Could Release Other Prefixes Dedicated to Special Uses

Historically, the telecommunications industry has designated certain prefixes for special uses, usually to an ILEC. These include numbers for recorded public information announcements such as time-of-day, weather forecasts, high-volume call-in numbers, and

³⁵ Remote Call Forwarding allows a customer to have a local telephone number in a distant location. RFC is similar to call forwarding on a residential line, except that the RCF customer has no phone, no office and no physical presence in that location. Direct Inward Dialing uses a trunk from the central office which passes the last two to four digits of the Listed Directory Number into the PBX, thus allowing the PBX to switch the call to the correct extension without the use of an attendant. Existing DID retail service is limited to PBX services. For purposes of providing INP, DID switch functionality is used to provide INP to any CLC customer regardless of the type of terminal equipment used on the customer's premises.

³⁶ However, one wireline carrier still remains non-LNP capable.

emergency preparedness³⁷ numbers. These prefixes are not made available for general commercial use, and thus numbers within these prefixes that are not in actual use lie vacant. In 1999, companies decided not to duplicate the special use prefixes in each area code. Concerned that this process could adversely affect the public, the CPUC directed that these prefixes should be duplicated in each new area code.

The utilization study shows that 13 prefixes are dedicated for special uses: one each for directory assistance, high volume calling, time, and emergency preparedness, and nine for Mobile Radio. TD questions the necessity of assigning an entire prefix for each of the purposes listed above.

Furthermore, having multiple special use prefixes is an inefficient use of numbers in the 714 area code as well as in other area codes in California. For example, if the 555 prefix³⁸ currently reserved only for directory assistance could be used to provide time and emergency preparedness then two more prefixes could be returned for reallocation in the 714 area code.

Similarly, expanded use of the 555 prefix throughout the state could result in more returned prefixes in other area codes. TD recommends that the CPUC initiate an investigation into broader use of the 555 prefix in California. The CPUC should further analyze the option of obtaining standard 555 numbers in every California area code to provide time, emergency preparedness, and weather information at no additional cost to customers.

In addition to the other utilization of these numbers, the distribution of these numbers among blocks also demonstrates inefficient utilization practices. Consistent with our statewide conservation measures adopted in July, TD recommends that CPUC require companies to assign numbers sequentially within each 1,000 block.

³⁷ The emergency preparedness prefixes are for services other than 911.

³⁸ The number used for inter-area code directory assistance, which is uniform throughout California, is 1-XXX-555-1212. This number has been designated for this use at the federal level.

Recommendations for Special-Use Prefixes

- *TD recommends that the CPUC initiate an investigation into the possibility of moving the numbers for time and emergency preparedness into the 555 prefix.*
- *TD recommends that the CPUC include in its investigation the broader use of the 555 prefix in California's area codes by providing standard 555 numbers in every California area code to provide time, emergency preparedness, and weather information.*
- *TD recommends that the CPUC require companies to assign numbers sequentially in special use prefixes. Where the numbers are presently assigned randomly, TD recommends that these numbers be moved and consolidated in one thousand-block in order to free more blocks for number pooling.*

2. Reserved Numbers Are a Potential Source of Additional Numbers

Carriers “set aside” numbers for future use by customers.³⁹ Previously, industry number assignment guidelines allowed companies to reserve a prefix for up to 18 months for customers’ future use.⁴⁰ The FCC’s first NRO Order modified the number reservation period to 45 days. This 714 utilization study incorporated the FCC’s 45-day requirement. The FCC later issued an extension until December 1, 2000 for companies to comply with the 45-day rule.⁴¹ The extension allows companies time to upgrade their number tracking mechanisms, which tally the quantities of reserved numbers they hold. The FCC’s second NRO Order on Reconsideration changed the number reservation period to 180 days. This took effect on December 29, 2000.⁴² Companies reported a total of 205,00 reserved numbers in the 714 utilization study.⁴³

³⁹ An example would be a customer request for 2,500 numbers to be used in 2000, coupled with a request to have the next 2,500 numbers in sequence “reserved” for the customer to use in 2001.

⁴⁰ Central Office Code (NXX) Assignment Guidelines, prepared by the Industry Numbering Committee, January 27, 1999 version, Section 4.4.

⁴¹ FCC Order 00-280, CC Docket No. 99-200, adopted and released on July 31, 2000.

⁴² See FCC Order 00-129, Paragraph 114.

⁴³ See Appendix D for a breakdown of reserved numbers reported in the 714 NPA by rate center.

Wireline carriers reported a total of 166,000 reserved numbers in the 714 area code. If the quantity of reserved numbers held by wireline carriers can be minimized, additional numbers could be available for immediate use by the companies from within their own number inventories, thus slowing the rate at which new prefixes are allocated to these companies. Numbers could also be freed up for reallocation in the 714 number pool. Currently there are no limitations on the quantity or percentage of numbers a company can classify as reserved before requesting new numbers. Similarly, companies are not required to use their reserved numbers stock before they can request that new numbers be allocated to them. Comparing the data on the Westminster rate center and the Buena Park rate center illustrates wide discrepancies between the quantity of reserved numbers companies hold. Ten wireline carriers reported having reserved numbers in each of those rate centers. However, wireline carriers have over five times as many reserved numbers in the latter rate center.⁴⁴ In another example, one company holds over 4,500 reserved numbers in one prefix in the Orange rate center. Other companies in that same rate center hold as few as zero reserved numbers. If the CPUC orders efficient use practices specific to reserved numbers, more numbers could be made available for customer use.

Wireless carriers reported 36,000 reserved numbers in the 714 area code. Wireless carriers also reported wide variances in reserved numbers. In the Santa Ana rate center, many wireless carriers reported between 0 and 300 reserved numbers for a given rate center. By contrast, there were three instances in that rate center where reported reserved numbers were between 2,500 and 3,500 in a given prefix. Just as for wireline carriers, efficient number use practices specific to reserved numbers could immediately free up numbers within these companies' inventories for use, and thus, could slow the rate at which new prefixes are allocated to these companies. Once wireless carriers are able to participate in number pooling, these practices could have the same efficiency gains as those for wireline carriers.

⁴⁴ Wireline carriers serving the Westminster rate center reported 1,753 reserved numbers and wireline

Recommendations for Reserved Numbers

- *The CPUC should monitor reserved number use for all companies by reviewing future utilization data to ensure companies are complying with the FCC's 180-day requirement.*
- *The CPUC should adopt efficient number use practices specific to companies' reserved number holdings. In developing these practices, the CPUC should investigate various alternatives including, but not limited to, 1) limits on the quantity or percentage of reserved numbers companies can hold, and 2) requirements for using reserved numbers prior to requesting new numbers.*

3. Restrictions on Administrative Numbers Could Yield More Numbers

Administrative numbers are those not assigned to customers and are generally used for a wide range of applications for companies' internal use, including testing, internal business, and other network purposes. Companies reported almost 45,000 administrative numbers in the 714 area code. Wireline carriers hold approximately 26,000 of these numbers and wireless carriers hold approximately 19,000 of them.

The utilization study revealed that there is a potential for companies to over-assign administrative numbers within a particular thousand block, prefix or rate center in the 714 area code. The following examples demonstrate this potential for over-assignment. First, in the Huntington rate center, a company is using over 1,100 numbers in one prefix for administrative purposes, while the average across all companies is 68. Also, while the Anaheim and Santa Ana rate centers report approximately the same number of administrative numbers used, the Anaheim rate center has approximately one-third of numbers assigned, essentially using administrative numbers at 3 times the rate. Given the variances in the levels of administrative numbers between companies and rate centers, it is unclear what basis companies use for placing numbers in this category. The CPUC should therefore pursue an investigation in this area.

carriers serving the Buena Park rate center reported 9,412 reserved numbers.

In addition, some companies randomly assign administrative numbers and are thereby wasting number resources. Companies could conserve numbers by changing the way in which these types of numbers are assigned. Some companies randomly assigned administrative numbers in multiple thousand-blocks within the same prefix when they have available number resources to centralize those assignments within one or a few blocks. This practice means that both wireline and wireless carriers will already have contaminated multiple thousand-blocks and prevents them from donating blocks once they can participate in number pooling, or from other LNP-based conservation measures.

Also, some companies holding multiple prefixes in a given rate center randomly assign administrative numbers throughout different prefixes when they have the available number resources to centralize the assignment of these numbers in one prefix in that rate center. TD questions the need for companies to hold administrative numbers in multiple prefixes in a given rate center, when they are using multiple prefixes to serve their internal purposes and not necessarily to serve customer needs.

Recommendations for Administrative Numbers

- *The CPUC should develop criteria by which companies assign administrative numbers. The CPUC should consider placing a limit on the quantity or percentage of administrative numbers companies are allowed to hold.*
- *The CPUC should develop rules that require companies to limit administrative number assignments within certain blocks in a given prefix. In cases in which companies hold multiple prefixes in a single rate center, the CPUC should develop rules that require companies to limit administrative number assignments within prefixes.*

4. Intermediate Numbers

The “intermediate number” category was only recently introduced by the FCC in its first NRO Order. This category tracks numbers that companies make available for use by another telecommunications carrier or non-carrier entity. Companies reported a total of approximately 385,000 intermediate numbers in the 714 area code. Wireline carriers hold about 288,000 of those numbers and wireless carriers hold a little over 97,000. The

quantity of intermediate numbers varied significantly among rate centers in the 714 area code.⁴⁵ Since the intermediate number category is new, the quantity of numbers reported by companies may increase over time as more companies become familiar with this category. TD notes that this number use category has the potential for abuse by companies if they use significant quantities of number resources for intermediate purposes. Therefore, TD recommends the CPUC continue to monitor intermediate number use.

Recommendation for Intermediate Numbers

- *The CPUC should monitor intermediate number use for all companies by reviewing future utilization filings to test whether potential abuses in this reporting category occur.*

a. Type 1 Numbers

Wireline carriers allocate numbers for use by wireless Type 1 carriers through Type 1 interconnection agreements.⁴⁶ Because wireline and wireless Type 1 carriers share responsibility for Type 1 numbers, both types of companies reported on these numbers. Wireline carriers report Type 1 numbers in the Intermediate category since they provide these numbers to another company. Wireline carriers also list the wireless carriers to whom they distributed ranges of numbers. Wireless Type 1 carriers report on the numbers they received, placing them in the Assigned, Administrative, Reserved, Intermediate, Aging, or Available categories.

Record keeping of Type 1 numbers is inadequate because, more often than not, wireline carriers' reports disagreed with wireless Type 1 carriers' report. In the 714 area code, over one half of all Type 1 numbers are unaccounted for or mismatched.⁴⁷ In some cases, wireless Type 1 carriers deny "owning" the numbers that wireline carriers report as distributed. In other cases, wireless Type 1 carriers go out of business and do not return

⁴⁵ See Appendix F for a breakdown of intermediate numbers held by wireline and wireless carriers.

⁴⁶ Type 1 numbers are *programmed* in the wireline carrier's end office, but are *used* by a wireless carrier.

⁴⁷ 152,700 out of a total of 286,600 Type 1 numbers are unaccounted for or mismatched.

their numbers to the wireline carrier. In either case, numbers are lying dormant, used by neither the wireline or wireless Type 1 carrier.

In today's scarce numbering environment, it is unacceptable to let numbers go unused because of inadequate record keeping. Wireline donor carriers currently do not monitor wireless Type 1 inventories, nor do they proactively reclaim unused Type 1 numbers from wireless carriers. TD recommends that wireline carriers perform an annual inventory check on Type 1 numbers to confirm that the numbers they have distributed are acknowledged by the recipient wireless Type 1 carrier. If errors are discovered, the wireline carriers should count the numbers as part of their own inventories.⁴⁸

Improved Type 1 number management is particularly crucial because unlike numbers held by most wireless carriers, Type 1 numbers are eligible for number pooling.⁴⁹ Therefore, once wireline carriers recover unused Type 1 numbers, these numbers could be made available for pooling. Despite the problems with reporting, TD has identified 14 blocks of Type 1 numbers in the 714 area code that may be eligible for donation to the pool.⁵⁰ The CPUC should recognize Type 1 numbers as a resource for number pooling and take steps to have wireline companies recover unused Type 1 numbers for donation to the number pool.

As described in Chapter 1, state and federal mandates require most companies to demonstrate efficient numbering practices before becoming eligible to obtain more numbers. In contrast, Type 1 wireless carriers have no check on their number use because they draw numbers directly from wireline companies, therefore avoiding the scrutiny of the official number administrator. TD recommends that Type 1 wireless carriers be subject to number conservation measures, and the CPUC should develop a system to ensure compliance.

⁴⁸ Type 1 numbers may go unused because wireless carriers go out of business or because of inadequate record keeping.

⁴⁹ The 714 study revealed that Type 1 numbers given to wireless carriers are from prefixes in which the wireline carriers have already initiated LNP. Because Type 1 numbers reside in the wireline carrier's end office, Type 1 numbers are LNP-capable and thus suited for pooling.

⁵⁰ These blocks are 10% or less contaminated.

Recommendations for Type 1 numbers:

- *Wireline and wireless carriers should improve Type 1 number inventory management. Wireline carriers should perform an annual inventory check of wireless Type 1 numbers to verify their records match that of the wireless Type 1 carriers' records. Companies should make inventory data available to the CPUC upon request. Wireline carriers should recover and add to their inventories any Type 1 numbers lying dormant.*
- *Type 1 carriers should be subject to number conservation techniques such as sequential numbering and fill rates. A system to ensure compliance with Type 1 number conservation measures should be developed.*
- *The CPUC should consider Type 1 numbers as potential donations to the number pool. Excess and unused Type 1 numbers should be returned to the wireline carriers and either used to serve customers or donated to the number pool.*

5. Aging Numbers

The FCC's first NRO Order defines aging numbers as disconnected numbers that are not available for assignment to another customer for a specified period of time. Consistent with the Industry Numbering Committee (INC) Guidelines, the CPUC adopted the FCC upper limits for aging numbers as 90 days for residential numbers and 365 days⁵¹ for business numbers.

In the 714 area code, there are approximately 218,000 numbers in the aging category, representing 5.52% of the total unavailable numbers. While most companies track aging telephone numbers by business and residential categories, Pacific Bell, the largest single holder of numbers in the 714 area code, does not differentiate between business and residential customers when tracking aging numbers. In the cases where only totals were supplied, the consultant chose to place those in the business category.

⁵¹ In the first NRO Order, both 360 days and 365 days were used as the time period for aging business numbers. In a clarifying order, the FCC adopted 365 days as the aging period for business numbers. When the CPUC sent out the parameters for utilization data for this study, the 360 day time period for aging business numbers was used. In order to be consistent with the time frames the FCC adopted, the CPUC is now using the 365 time period for aging business numbers.

Therefore, the vast majority of aging numbers is categorized in the business category and may give a false impression that most of the aging numbers are business numbers.

Because Pacific Bell does not differentiate between residential and business in reporting aging numbers, it is uncertain whether Pacific Bell is adhering to the maximum 90-day aging period for residential numbers, and whether at the end of the 90-day period Pacific Bell is reassigning these numbers to the “available” category. Pacific Bell may be allowing residential numbers to be in the aging category for nine months longer than is permissible under both FCC and CPUC rules.

A higher percentage of aging numbers occurs in the wireless category, as compared to the wireline category. Aging numbers represent 7.05% of the total unavailable wireless numbers, or about 94,000 numbers. Aging numbers represent 4.73% of the total unavailable wireline numbers, or about 124,000 numbers. This is consistent with the higher turnover or “churn” that occurs in the wireless industry. Appendix G shows the breakdown of aging numbers by wireless and wireline categories.

Recommendation for Aging Numbers

- *Although the CPUC has required all companies to differentiate aging numbers between residential and business and track the two categories separately, Pacific Bell has not complied with these requirements. Pacific Bell should be redirected to differentiate aging numbers between business and residential, track them separately, and report on each category accurately. The CPUC should assess penalties for failure to comply.*

6. The Need to Audit the Data

The data analyzed in this 714 utilization study was self-reported by companies. Given the area code crisis in California, the CPUC should audit this data for two reasons. First, verifying number usage data is important to ensure that the public resource of telephone numbers within area codes is efficiently managed. Second, audits will help verify whether companies are complying with CPUC and FCC rules for number usage.

Recommendation for Audits

- *The CPUC should audit the data submitted by companies in this study and future area codes number utilization studies.*

CHAPTER THREE: NUMBER POOLING AND OTHER NUMBER CONSERVATION MEASURES

A. Introduction

Many of the recommendations in Chapter Two resulted directly from the analysis of the utilization data and address actions that the CPUC should undertake to make additional numbers available for either pooling or for the regular monthly lottery. The recommendations contained in this chapter suggest additional conservation measures as required by Public Utilities Code Section 7935(a). The CPUC could adopt the following conservation measures in the 714 area code and statewide: LNP-related actions, Unassigned Number Porting, Rate Center Consolidation, and prefix sharing. When applied, these conservation measures would result in uniform policies which will cause companies to use numbers more efficiently across California and would minimize customer confusion.

B. Number Pooling

Number pooling is an excellent method of number conservation. The CPUC worked aggressively to bring number pooling to California and the results have been dramatic. Pools are underway in the 310, 415, 714 and 909 area codes and the CPUC plans to roll out the maximum possible number of pools before national number pooling begins.

In the 310 area code, number pooling has been in effect for over nine months. The pool has satisfied the numbering needs of all companies participating in the pool without opening a single prefix.⁵² Prior to pooling, 128 prefixes would have been opened to satisfy the demand for numbers. Number pooling has avoided the need to open prefixes and extended the life of the 310 area code by at least 18 months.⁵³

⁵² Two prefixes have been opened in the 310 pool for LRN assignment purposes.

⁵³ As of December 18, 2000.

The positive experience in 310 is mirrored in 415, 714 and 909. Only two prefixes have been opened, and the numbering needs of companies have been met.⁵⁴ Pooling has saved 44 prefixes in these three area codes.

Pooling benefits not only the public but the companies as well by reducing the time necessary to acquire numbering resources. Without pooling, activating new numbers takes at least 66 days.⁵⁵ With number pooling, activating new numbers can be accomplished in three weeks.

1. More Accurate Forecasting Will Improve Number Pooling

So far in California, number pooling has worked well because companies have met their numbering needs from the excess numbers other companies donate to the pool. The CPUC has set aside prefixes in each area code that will be used to replenish the pools if and when donations are no longer sufficient. There are a limited number of set-aside prefixes, so it is crucial that these prefixes be opened only when there is a true need.

If donated numbers are not sufficient to meet the companies' forecasts, a new prefix may need to be opened. Industry guidelines suggest replenishing a pool at least 66 days in advance when the forecast shows a company will need more numbers than the pool has on hand. This presents a problem, as companies in California have been, on average, forecasting over *six times* more numbers than they will take from the pool. In many cases the forecasts are incredibly exaggerated. For example, in the San Francisco Central Rate Center in the 415 area code, companies predicted they would use 75 blocks in the first two months of the pool. However, they used only one. Had the pool administrator opened prefixes based on the forecast, the prefixes would lie unused in the rate center.⁵⁶

⁵⁴ Three prefixes have been opened in the 415 pool for LRN assignment purposes

⁵⁵ Before a whole prefix is activated, the prefix must be first listed for 66 days in the Local Exchange Routing Guide (LERG), stating the rate center where the prefix will be located.

⁵⁶ Data can be found in Pooling Appendix.

The CPUC has thus far prevented prefixes from being unnecessarily opened by ordering the Pooling Administrator (PA) to consult with TD prior to opening any prefix. However, the CPUC believes this issue should be addressed for the long term. Industry guidelines encourage companies to over-forecast, because a company can only be assured numbers for which it forecasts.⁵⁷ In essence, a company could be penalized for under-forecasting. Since there is no penalty for over-forecasting, it is in companies' interests to err on the side of over-forecasting. TD recommends the CPUC develop specific rules guiding company forecasting. TD also recommends that the PA take historical usage into account when determining when to open a fresh prefix of 10,000 numbers.

Recommendation for Number Pooling

- *The CPUC should work with industry groups and the Pooling Administrator to develop specific rules for companies pertaining to forecasting a six-month inventory when a number pool is authorized in a particular area code.*

C. Lack of Local Number Portability Stands as a Key Barrier to Pooling

Full LNP deployment in the 714 area code is critical to effective number conservation. As described in Chapter One, LNP enables customers to keep their telephone numbers when they switch companies. Because the number remains with the customer and can be transferred to different companies, there is no need to distribute duplicate numbering resources to both companies. Also, LNP is the technology platform that makes number pooling possible.

In an order released in 1997, the FCC ordered all wireline carriers in the top 100 MSAs to become LNP capable by December 1998.⁵⁸ The 714 area code falls within two of the top 100 MSAs. The study revealed that all but one wireline carrier in the 714 area code is LNP capable. This company holds 9,000 numbers that could be made available for number pooling, if it implemented LNP technology. This non-compliance could likely be explained by the existence of subsequent FCC documents contradicting the original

⁵⁷ Sections 6.1.4 & 6.1.5 in INC 99-0127-023, January 10, 2000

⁵⁸ FCC 96-286 in CC Docket No. 95-116.

LNP order. However, in the Second Report and Order adopted December 7, 2000, the FCC resolved the confusion within footnote 399 stating “Specifically, we have mandated thousands-block number pooling in the top 100 MSAs where carriers are required to be LNP capable.”

Wireless carriers, however, requested and received from the FCC an extension of time, until November 2002, to become LNP capable.⁵⁹ The CPUC filed comments with the FCC arguing that wireless carriers should be required to participate in pooling immediately upon becoming LNP capable.⁶⁰ In the Second Report and Order, the FCC agreed with the CPUC and will require wireless carriers to participate in pooling immediately upon becoming LNP capable. Wireless non-LNP capable carriers hold 200 prefixes in the 714 area code, of which 302 blocks could be made available for pooling if they were required to participate in the pool.

As noted earlier, federal LNP requirements are directed at companies in the country’s top 100 MSAs. But roughly half of the area codes in California fall partially or completely outside of these MSAs. These area codes are facing similar numbering crises, and LNP is not ordered. Without full activation of LNP throughout California, the CPUC is effectively prevented from operating number pools in half of the area codes in the state. California has a pending petition at the FCC to extend LNP deployment statewide. The CPUC should urge the FCC to act on the petition for authority to order LNP capability statewide.

Recommendation for LNP

- *The CPUC should request that non-LNP capable wireline carriers in the 714 area code become LNP capable.*

D. Unassigned Number Porting

Unassigned Number Porting (UNP) is the term used to describe the transfer of unused numbers from one company to another. Like number pooling and the porting of

⁵⁹ FCC 99-19, WT Docket 98-229; CC Docket No. 95-116, Released: February 9, 1999. Paging companies are indefinitely exempt from becoming LNP-capable.

⁶⁰ Further Comments of the California Public Utilities Commission and the People of the State of California in CC Docket No. 99-200, submitted May 19, 2000.

assigned numbers from company to company, UNP is made possible by deployment of LNP. The primary benefit of UNP would be increased access to unused numbers stranded in carrier inventories. UNP would also strengthen competitively neutral access to public numbering resources by enabling companies with smaller inventories to access the inventories of companies with larger number holdings.

UNP would allow companies to transfer small increments of numbers between themselves. Various proposals have suggested limiting the increments to 25 or 100 numbers.⁶¹ Two efficiencies would be gained: 1) companies with smaller scale needs would be able to receive numbers in increments appropriate to meet their needs, and 2) unused numbers stranded in company inventories would be transferred to companies where they could be put to use.

Currently, companies receive unused numbers from the NANPA or the PA in increments of 10,000 numbers (prefixes) or 1,000 numbers (blocks). In areas without number pooling, prefixes held in company inventories that are not put to use within six months must be returned, but only if uncontaminated. If just one number has been used, the remaining 9,999 are stranded in the company inventory. In areas with number pooling, blocks are eligible for return only if 10% or less contaminated. For example, if a company receives 1000 numbers and only has need for 100 numbers, the remaining 900 numbers are eligible for return. However, if a company received 1000 numbers and only has need for 101 numbers, the remaining 899 numbers are ineligible for return and are stranded in the company inventory. UNP is one way to address the problem of stranded numbers.

The FCC has contemplated UNP but has so far declined to act.⁶² The FCC has not ruled out UNP as a conservation measure.⁶³ In the absence of a voluntary company

⁶¹ See INC Contribution #336R of September 29, 2000, "UNP Architecture With Minimal Administrative Structure" and Focal and MCIWorldcom's Report on UNP Trial

⁶² First NRO Order, FCC 00-104, CC Docket 99-200, ¶ 230. "We reiterate our finding that UNP and ITN [individual telephone number pooling] are not yet sufficiently developed for adoption as nationwide numbering resource optimization measures and conclude that ITN and UNP should not be mandated at this time."

⁶³ See ¶ 231: "We permit carriers, however, to engage voluntarily in UNP where it is mutually agreeable and where no public safety or network reliability concerns have been identified."

agreement to implement UNP, however, the CPUC could only implement UNP with FCC approval. Given the number conservation benefits to be had, the CPUC should petition the FCC for authority to undertake a UNP trial.

Recommendations for UNP

- *The CPUC should petition the FCC for authority to implement UNP statewide.*
- *The CPUC should solicit comments in order to develop rules and practices necessary to implement UNP.*

E. Consolidation of Rate Centers to Maximize Number Use

Rate Center Consolidation (RCC) is a potential number conservation tool because it allows companies to use numbers over a larger geographic area, thus slowing the rate at which prefixes are used. Rate center location dictates both the scope of a customer's local calling area and the charges assessed per toll call. In California, each rate center governs a relatively small, uniform local calling area, measured from the rate center of each exchange. Because the local calling areas in California are small compared to those in many other states, it is virtually impossible to migrate to larger calling areas via consolidation of rate centers without eliminating at least some toll call routes.

Eliminating toll routes would have the residual effect of reducing revenues for toll service providers, which include both local exchange carriers and interexchange carriers. The two major ILECs in California, Pacific Bell and Verizon (formerly GTE California), have expressed at industry meetings their belief that they should be "made whole" for any loss of toll revenues that likely would result from consolidating rate centers. An industry task force which the CPUC charged with developing a proposal for rate center consolidation reported to the CPUC in March 1999 that it would offer no such plan until the CPUC addresses revenue and consumer impact issues. However, it is difficult, if not impossible for the CPUC to address consumer and revenue impacts if the CPUC has no plan before it for consolidating rate centers, which would provide the context and details for assessing such impacts.

California has roughly 750 rate centers, each of which is the approximate center of

a 12-mile local calling area. With no input from the industry, the CPUC cannot begin to guess what approach would be most appropriate. For example, California could consolidate from 750 rate centers to 400, or to 200. Each of those possibilities would present different rate "impacts" for both companies and customers. Alternatively, rather than attempting to consolidate rate centers on a statewide basis, the CPUC could consider consolidating rate centers on an area code-by-area code basis. All rate centers in one area code, for example, could be consolidated into one rate center. This would eliminate both the uniform statewide local calling area of 12 miles and uniform statewide rates for each company, thus generating some amount of customer confusion as individuals travel throughout the state for business or social purposes, or relocate their home or business. Further, because companies would lose toll revenues when rate centers are consolidated and local calling areas expanded, the CPUC would need to address the question of which, if any, companies should be allowed to recover those lost revenues, and if so, how.⁶⁴ Finally, rate center consolidation will mean direct, substantial, and permanent basic rate increases for many customers, unless the ILECs forgo their claim that RCC should be revenue neutral. Economics and Technology, a Boston consulting group, has projected that "...rate center consolidation in California could result in a per-access-line increase of \$5.56 in basic monthly rates for California ILEC customers."⁶⁵

This may not be an acceptable option, even though California presently has among the lowest local exchange rates in the country. And, if the ILECs continue to press for revenue neutrality, the very process of determining the amount of those revenues, as well as how those monies should be recovered and from what class(es) of customers, would constitute a rate-design proceeding of significant scale and scope. Such a proceeding

⁶⁴ For example, while the ILECs still control roughly 95% of the residential toll market, competitors have succeeded in making significant inroads into the business toll market, where the ILECs now hold only 50% of the market. If the CPUC were to decide that the ILECs should be "made whole" for any lost toll revenues, then other companies legitimately could demand a mechanism to make them whole as well. Alternatively, if the competitors cannot practically be reimbursed for lost revenues, then as a policy matter, the CPUC must decide if it is reasonable to allow only the ILECs to recover such revenue.

⁶⁵ "Where Have All the Numbers Gone?" (Second Edition), The Ad Hoc Telecommunications Users Committee, prepared by Economics and Technology, Inc., June 2000. The estimate of \$5.56 may be conservative.

could consume a tremendous amount of CPUC, industry, and consumer representative resources, and take one to two years.⁶⁶

Nonetheless, because RCC offers the potential for conserving significant quantities of numbers in California, TD recommends that the CPUC renew its efforts to determine how RCC could be implemented in California. The industry should be directed to posit several different scenarios, if they cannot agree on one proposal.

Recommendation for Rate Center Consolidation

- *The CPUC should undertake further investigation by ordering the telecommunications industry to develop a plan, within 180 days, for rate center consolidation.*

F. Sharing Prefixes May Yield More Efficient Number Use

In analyzing previous utilization data in the 310 area code, TD became aware that two non-affiliated companies were sharing prefixes under an informal arrangement. Using LNP technology, a company with excess numbers had transferred whole thousand blocks of numbers to the other company for use. TD believes this sharing arrangement promotes efficient number use among companies.

Some companies reporting utilization data in the 714 area code are affiliated through mergers, acquisitions or other business relationships. Despite these affiliations, each company separately requests numbers from the NANPA.⁶⁷ TD notes that the benefits of sharing prefixes may be different in area codes in which number pooling has already been implemented versus those that number pooling has not been implemented. Sharing prefixes between companies appears worthy of further investigation by the CPUC as a mechanism to promote more efficient use of numbers.

⁶⁶ The last major rate design proceeding undertaken for Pacific Bell and Verizon, then GTEC, was the Implementation and Rate Design (IRD) phase of the New Regulatory Framework proceeding, 1.87-11-033. The IRD phase took three years to complete.

⁶⁷ Prior to the opening of the 714 number pool on September 29, 2000, all companies requesting telephone numbers got prefixes from the NANPA. Currently, only non-LNP capable carriers receive prefixes from the NANPA, while LNP capable carriers receive thousand-number blocks from the pooling

Recommendation for Sharing of Prefixes

- *The CPUC should further explore sharing of prefixes as a means to more efficiently utilize numbers in all area codes*

CONCLUSION

Analyzing the utilization data provided by carriers has provided useful information regarding number availability and usage practices in the 714 area code. It has also offered insights into developing better public policies to improve efficiency of number use.

We now know that of the approximately 7.7 million usable numbers in the 714 area code, roughly 3.9 million, or approximately half, presently are not in use. Despite the increasing demand for numbers, the 714 area code is not fully utilized. The data indicates that there is considerable room for growth within the existing 714 area code, and it is premature to consider splitting or overlaying the 714 area code at this time.

The CPUC already has directed carriers to employ measures to use the numbering resources in 714 more efficiently. Recently adopted fill rates and sequential numbering rules will insure that carriers better use their existing resources, and receive additional numbers only on an as-needed basis. With pooling in the 714 area code, all LNP-capable carriers are given numbers expeditiously and in usable blocks. Allocating numbers in thousand-block increments rather than in full prefixes of 10,000 numbers ensures that the numbering resources are used more efficiently and can greatly extend the life of the existing area code. Implementing these more efficient numbering practices is an important first step, but more needs to be done.

In analyzing the carrier data, it is now clear that because of 1) past inefficiencies in numbering policies and practices, 2) the 10% contamination ceiling for block donations to pooling, and 3) the deferral of LNP capability for wireless carriers, 2.1 million numbers are not in use in 714 but cannot be reassigned to other carriers. Changing

administrator.

contamination thresholds, implementing UNP, and requiring LNP capability for all carriers could make some these stranded numbers available for reassignment.

The CPUC should continue its collaborative process with the FCC and the telecommunications industry to implement Unassigned Number Porting, the development of non-geographic-specific area codes, and other measures which will more fully utilize numbers. The CPUC should begin implementation of the many number conservation and management practices found in the Recommendations Section of this report. As a public resource, it is important that our numbering supplies are used as efficiently and effectively as possible.

APPENDIX A-1

DEFINITIONS FOR UTILIZATION STUDY

Administrative: Administrative numbers are numbers used by telecommunications carriers to perform internal administrative or operational functions necessary to maintain reasonable quality of service standards. Subcategories used in the Utilization Studies are:

Internal Business Purpose/Official Numbers: A number assigned by a service provider for its own internal business purposes

- **Test Numbers:** Telephone numbers (TNs) assigned for inter-and intra-network testing purposes
- **Other Administrative Numbers** (include only Location Routing Number, Temporary Local Directory Number and Wireless E911 ESRD/ESRK) where
- **Identical to a Local Routing Number (LRN):** The ten-digit (NPA-XXX-XXXX) number assigned to a switch/point of interconnection (POI) used for routing in a permanent local number portability environment
- **Temporary Local Directory Number (TLDN):** A number dynamically assigned on a per call basis by the serving wireless service provider to a roaming subscriber for the purpose of incoming call setup
- **Wireless E-911 ESRD/ESRK:** A ten-digit number used for the purpose of routing an E911 call to the appropriate Public Service Answering Point (PSAP) when that call is originating from wireless equipment. The ESRD identifies the cell site and sector of the call origination in a wireless call scenario. The Emergency Services Routing Key (ESRK) uniquely identifies the call in a given cell site/sector and correlates data that is provided to a PSAP by different paths, such as the voice path and the Automatic Location Identification (ALI) data path. Both the ESRD and ESRK define a route to the proper PSAP. The ESRK alone, or the ESRD and/or Mobile Identification Number (MIN), is signaled to the PSAP where it can be used to retrieve from the ALI database, the mobile caller's call-back number, position and the emergency service agencies (e.g., police, fire, medical, etc.) associated with the caller's location. If a NANP telephone number is used as an ESRD or ESRK, this number cannot be assigned to a customer.

For convenience, "other administrative numbers" are reported as a group for purposes of the Utilization Study

Aging Numbers: Aging numbers are disconnected numbers that are not available for assignment to another end user or customer for a specified period of time. Numbers previously assigned to residential customers may be aged for no more than 90 days. Numbers previously assigned to business customers may be aged for no more than 360 days. For purposes of the Utilization Study, carriers are to separately report aging numbers associated with residential service from those associated with business service.

APPENDIX A-2 (continued)

Assigned Numbers: Assigned numbers are numbers working in the Public Switched Telephone Network under an agreement such as a contract or tariff at the request of specific end users or customers for their use, or numbers not yet working but having a customer service order pending. Numbers that are not yet working and have a service order pending for more than five days shall not be classified as assigned numbers. For purposes of the Utilization Studies, numbers for non-working wireless and for interim number portability are to be considered as assigned numbers in Part 1-Section A and separately identified in Part 2. See Interim Number Portability and Non-Working Wireless for definitions.

Available Numbers: Available numbers are numbers that are available for assignment to subscriber access lines, or their equivalents, within a switching entity or point of interconnection and are not classified as assigned, intermediate, administrative, aging, or reserved.

COC Type: Three-digit element defining the use of the Central Office Code (codes such as 0XX used for access tandem and testboard addressing or a "+" symbol that indicates direct routing to the designated switch in the NPA. 2XX-9XX values are considered NXXs.) Allowable codes in the LERG Destination Code by LATA and Tandem Homing Arrangements (LERG 6/9) are:

ATC = Access Tandem Code (0/1XX)
CDA = Customer Directory Assistance only (555 line numbers are assigned by the North American Numbering Plan Administration)

EOC = End Office Code
PLN = Planned Code - non-routable
PMC = Public Mobile Carrier (Type 2 Interconnected)
RCC = Radio Common Carrier (Dedicated Type 1 Interconnected)
SIC = Special 800 Service Code
SP1 = Service Provider - Miscellaneous Service (Type 1 Interconnected)
SP2 = Service Provider - Miscellaneous Service (Type 2 Interconnected)
TST = Standard Plant Test Code

Allowable codes in the LERG Oddball file (LERG6ODD only) are:

700 = 700 IntraLATA Presubscription
AIN = Advanced Intelligent Network
BLG = Billing Only
BRD = Broadband
CTV = Cable Television
ENP = Emergency Preparedness
FGB = Feature Group B Access
HVL = High Volume
INP = Information Provider
LTC = Local Test Code
N11 = N11 Code
ONA = Open Network Architecture
PRO = Protected
RSV = Reserved
RTG = Routing Only
UFA = Unavailable for Assignment

APPENDIX A-1 (continued)

Interim Number Portability (INP): The interim ability to move telephone service from one service provider to another service provider using Remote Call Forwarding (RCF), Direct Inward Dialing (DID), or equivalent means where:

- *Remote Call Forwarding allows a customer to have a local telephone number in a distant location. Every time someone calls that number, that call is forwarded to the RCF customer in the distant location. Remote call forwarding is similar to call forwarding on a residential line, except that the RCF customer has no phone, no office and no physical presence in that location.*
- *A DID (Direct Inward Dial) trunk is a trunk from the Central office which passes the last two to four digits of the Listed Directory Number into the PBX, thus allowing the PBX to switch the call to and thus ring the correct extension" without the use of an attendant (Newton's Telecom Dictionary). Existing DID retail service is limited to PBX services. For purposes of providing INP, Pacific and GTEC will use the DID switch functionality to provide INP to any CLC customer regardless of the type of terminal equipment used on the customers' premises.*
- *For the purposes of the Utilization Study, each carrier must report the quantity of its assigned numbers that are dedicated to providing INP under Assigned Numbers in Part 1-Section A and separately identified in Part 2.*

Intermediate Numbers: Intermediate numbers are numbers that are made available for use by another telecommunications carrier or non-carrier entity for the purpose of providing telecommunications service to an end user or customer. Numbers ported for the purpose of transferring an established customer's service to another service provider shall not be classified as intermediate numbers. For Type 1 donor carriers, Type 1 numbers are to be reported as intermediate numbers in Part 1-Section A and detailed information is to be provided in Part 2 for the Utilization Studies. For Type 1 recipient donors, Type 1 numbers shall be reported in the Part 1-Section B for the Utilization Studies. For definition, see Type 1 numbers.

Local Number Portability: The ability to move a telephone number from one service provider to another service provider using LRN-LNP technology

APPENDIX A-1 (continued)

Non-Working Wireless: this category is for wireless companies only to report numbers that they have already assigned to customer equipment, but are not yet working. For example, cellular carriers often pre-package a cellular telephone with an assigned telephone number for sale to customers. Those phone numbers are assigned, but are not actually activated until after the customer purchase is made. For the purposes of the Utilization Study, each carrier must report the quantity of its non-working wireless numbers under Assigned Numbers in Part 1-Section A and separately identified in Part 2.

OCN: Operating Company Number (OCN) assignments must uniquely identify the applicant. Relative to CO Code assignments, NECA-assigned Company Codes may be used as OCN's. Companies with no prior CO Code or Company Code assignments should contact NECA (973-884-8355) to be assigned a Company Code(s). Since multiple OCNs and/or Company codes may be associated with a given company, companies with prior assignments should direct questions regarding appropriate OCN usage to the Traffic Routing Administration (TRA) on 732-699-6700

Reserved Numbers: Reserved numbers are numbers that are held by service providers at the request of specific end users or customers for their future use. Numbers held for specific end users or customers for more than 45 days shall not be classified as reserved numbers.

Special Use NXX Codes: Certain NXX codes have traditionally been reserved or designated for special uses, and have not been available for assignment by carriers for general commercial use in providing telephone numbers to customers. These NXX prefixes are restricted to such special uses as recorded public information announcements of time-of-day and weather forecasts, high-volume call-in numbers, and emergency access numbers used by the Federal Emergency Management Administration (FEMA), etc.

Type 1 Numbers: numbers pursuant to a Type 1 interconnection agreement. The Type 1 interconnection is a connection between a mobile/wireless service provider and an end office of another service provider for the purpose of originating and terminating traffic or for access to end user services (i.e. DA, Operator services, 911, etc). The interconnection consists of a facility between the mobile/wireless service provider and the end office, switch usage, and telephone numbers (only required if the mobile carrier wishes to receive originating (L/M) traffic). For the purposes of the 310 Utilization Study, both mobile/wireless service providers who have received Type 1 numbers and those service providers who have provided Type 1 numbers to mobile/wireless service providers are asked to report on those numbers at the 1000 block level.

Appendix A-2
Companies Holding Prefixes in the 714 Area Code

1 AB CELLULAR HOLDING, LLC DBA AT&T WIRELESS
2 AIRSTAR PAGING
3 AIRTOUCH CELLULAR - CA
4 AIRTOUCH PAGING - CALIFORNIA
5 ALLEGIANCE TELECOM, INC.-CA
6 AT&T - LOCAL - CA
7 AT&T LOCAL
8 COOK TELECOM, INC.
9 COX CALIFORNIA PCS, INC.
10 COX CALIFORNIA TELECOM, INC.
11 CRL NETWORK SERVICES, INC
12 DIGITCOM SERVICES, INC.
13 FIRSTWORLD ANAHEIM
14 FIRSTWORLD SO CA
15 FOCAL COMMUNICATIONS CORP OF CALIFORNIA
16 FRONTIER LOCAL SERVICES, INC.
17 GST PACIFIC LIGHTWAVE
18 GTE CO OF CALIFORNIA
19 ICG TELECOM GROUP - CA
20 INTERMEDIA COMMUNICATIONS INC. - CA
21 LEVEL 3 COMMUNICATIONS, LLC-CA
22 MAP MOBILE COMMUNICATIONS, INC.
23 MCIMETRO, ATS, INC.
24 MEDIAONE TELECOMMUNICATIONS OF CALIFORNIA, INC.
25 MESSAGE CENTER BEEPERS, INC
26 METROCALL
27 MGC COMMUNICATIONS, INC.-CA
28 MOBILECOMM
29 NATIONWIDE PAGING, INC.
30 NETWORK SERVICES LLC
31 NEXTEL COMMUNICATIONS
32 NEXTLINK OF CALIFORNIA
33 OPTEL CALIFORNIA TELECOM, INC
34 PACIFIC BELL
35 PACIFIC BELL - CLEC
36 PACIFIC BELL MOBILE SERVICES
37 PAC-WEST TELECOMM, INC.
38 PAETEC COMMUNICATIONS, INC. - CA
39 PAGECELL, INC. - CALIFORNIA
40 PAGEMART, INC.
41 PAGENET
42 PAGERS PLUS DBA PAGEPROMPT, INC.
43 PAGING DIMENSIONS, INC.
44 PAGING PLUS
45 PREFERRED NETWORKS, INC.
46 SAN DIEGO PAGING
47 SPRINT COMMUNICATIONS COMPANY, L.P. - CA
48 TELEPORT COMMUNICATIONS GROUP - LOS ANGELES
49 TELIGENT, INC.-CA
50 THE TELEPHONE CONNECTION OF LOS ANGELES, INC.
51 THE WESTLINK COMPANY
52 TIME WARNER COMMUNICATIONS AXS OF CALIFORNIA
53 U.S. TELEPACIFIC CORP.-CA
54 WINSTAR WIRELESS, INC.-CA
55 WORLDCOM TECHNOLOGIES, INC.-CA

Appendix B
Table B-1
3.9 Million Available Numbers in the 714 Area Code

Wireline Carriers	1,928,722
Wireless Carriers	654,447
Type 1 Carriers	<u>135,555</u>
Subtotal	2,718,724
Available for Lottery	790,000
Set Aside for Pooling	<u>390,000</u>
Total	3,898,724

The 2.7 million numbers assigned to carriers are broken down as:

	Blocks	Numbers
Wireline Carriers		
Blocks with 0% contamination	823	823,000
Blocks with more than 0% up to 10%	484	469,905
Blocks with more than 10% up to 15%	81	71,520
Blocks with more than 15% up to 20%	73	59,099
Blocks with more than 20% up to 25%	35	27,275
Blocks with more than 25% contam.	3044	<u>477,923</u>
Total Available Numbers		1,928,722

Wireless Carriers		
Blocks with 0% contamination (1)	235	235,000
Blocks with more than 0% up to 10%	67	65,248
Blocks with more than 10% up to 15%	16	14,028
Blocks with more than 15% up to 20%	26	21,290
Blocks with more than 20% up to 25%	36	12,452
Blocks with more than 25% contam.	1620	306,429
Total Available Numbers		654,447

Type 1 Carriers	
Reported as Intermediate Numbers by Donors	286,600
Reported as Unavailable Numbers by Type 1 Carriers	(102,480)
Est. of Unavailable Numbers of Remaining Type 1 Carriers (2)	<u>(48,565)</u>
Total Available Numbers	135,555

(1) Three companies holding five codes did not submit utilization data. These 50,000 numbers have been counted as available in 50% contaminated blocks.

(2) Of the 286,600 numbers reported by donors as Type 1 numbers, Type 1 recipients only reported on 194,450 numbers with 102,480 as unavailable and 91,970 as available. Therefore, 92,150 numbers are unaccounted for. Staff estimated the unavailable numbers from the unaccounted numbers using the same ratio as numbers that were reported, namely 102,480 divided by 194,450.

Appendix B
Table B-2
Numbers Potentially Available Under Different Pooling Scenarios

		Running Total
Wireline Carriers: Current Level at 10% or less (1)	1,272,970	
Set Aside for Pooling	390,000	
Available for Lottery	<u>790,000</u>	
Subtotal	2,452,970	2,452,970
 Other Possibilities for Pooling:		
Available Numbers for non LNP blocks of Wireline Carriers	9,945	2,462,915
Unavailable Numbers from Special Use Codes (2)	20,000	2,482,915
Wireline Carriers: Up to 15%	71,520	2,554,435
Wireline Carriers: Up to 20%	59,099	2,613,534
Wireline Carriers: Up to 25%	27,275	2,640,809
Cellular and PCS Carriers: Up to 10% (3)	186,154	2,826,963
Cellular and PCS Carriers: Up to 15% (3)	8,697	2,835,660
Cellular and PCS Carriers: Up to 20% (3)	13,200	2,848,860
Cellular and PCS Carriers: Up to 25% (3)	7,720	2,856,580
Type 1 Carriers: Up to 10%	13,334	2,869,914
Type 1 Carriers: Up to 15%	4,403	2,874,317
Type 1 Carriers: Up to 20%	5,726	2,880,043
Type 1 Carriers: Up to 25%	7,745	2,887,788
Paging Carriers: Up to 10% (3)	114,094	3,001,882
Paging Carriers: Up to 15% (3)	5,331	3,007,213
Paging Carriers: Up to 20% (3)	8,090	3,015,303
Paging Carriers: Up to 25% (3)	4,732	3,020,035
Total	3,020,035	

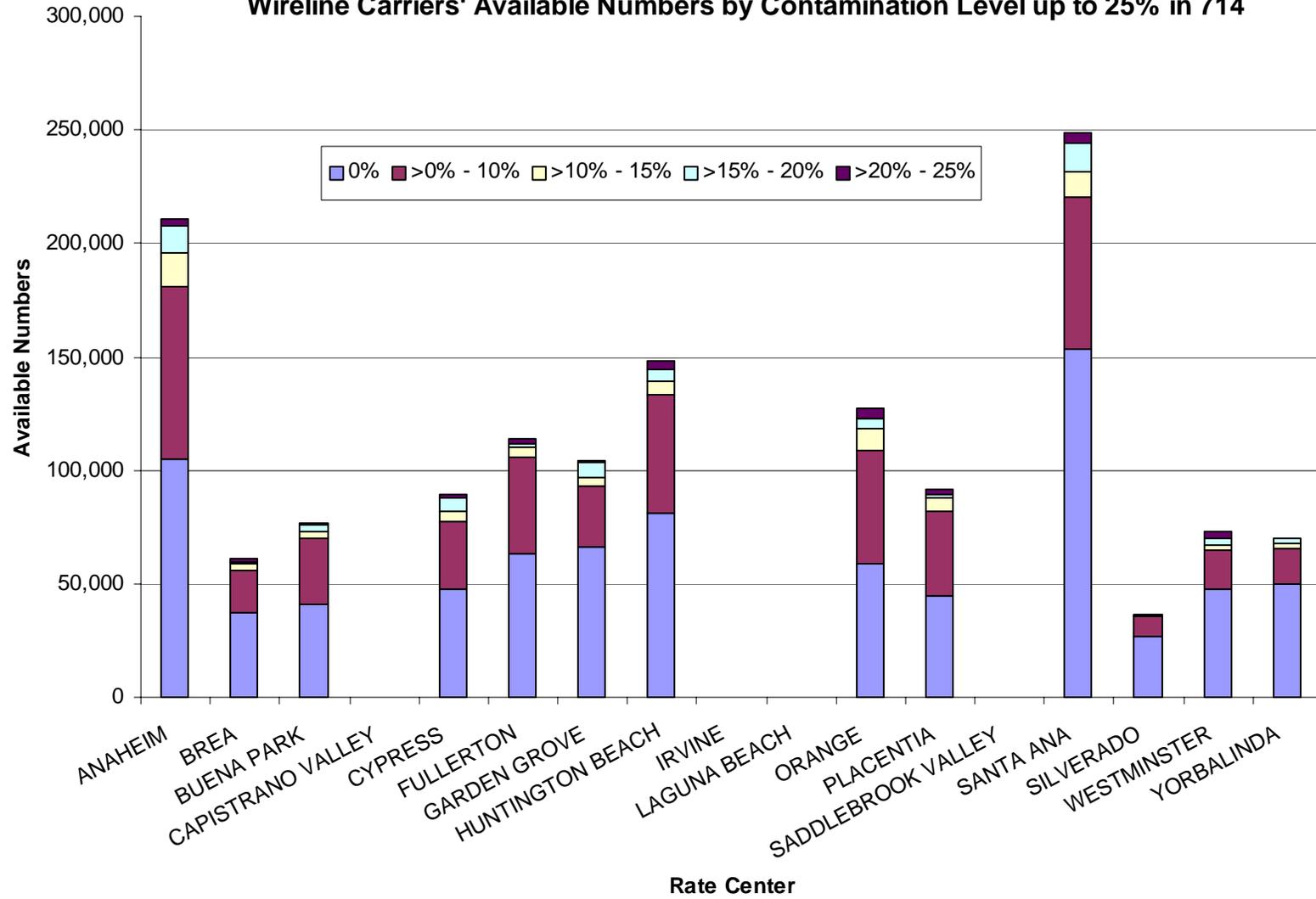
(1) Carriers are allowed to maintain a six month inventory so actual donated to pooling is a maximum of 667,000 numbers as of December 12, 2000.

(2) See discussion on special use codes in Section D.1.c.

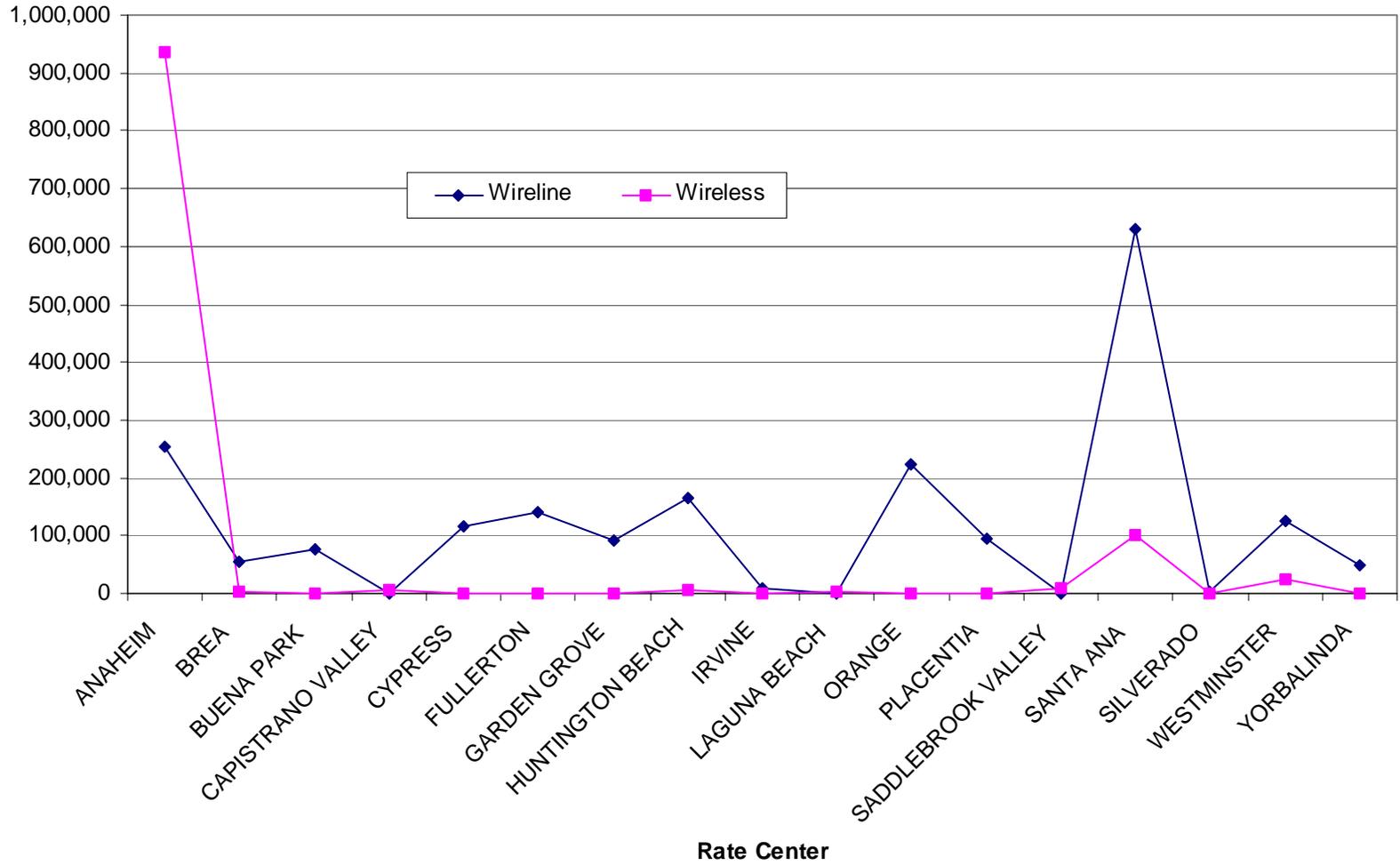
(3) While cellular and PCS carriers have until November 2002 to become LNP capable, paging companies currently are totally exempted. Therefore, TD estimated the percentage of codes held by cellular and PCS (62%) vs paging (38%) and applied the percentage to the available numbers.

**Appendix B
Table B-3**

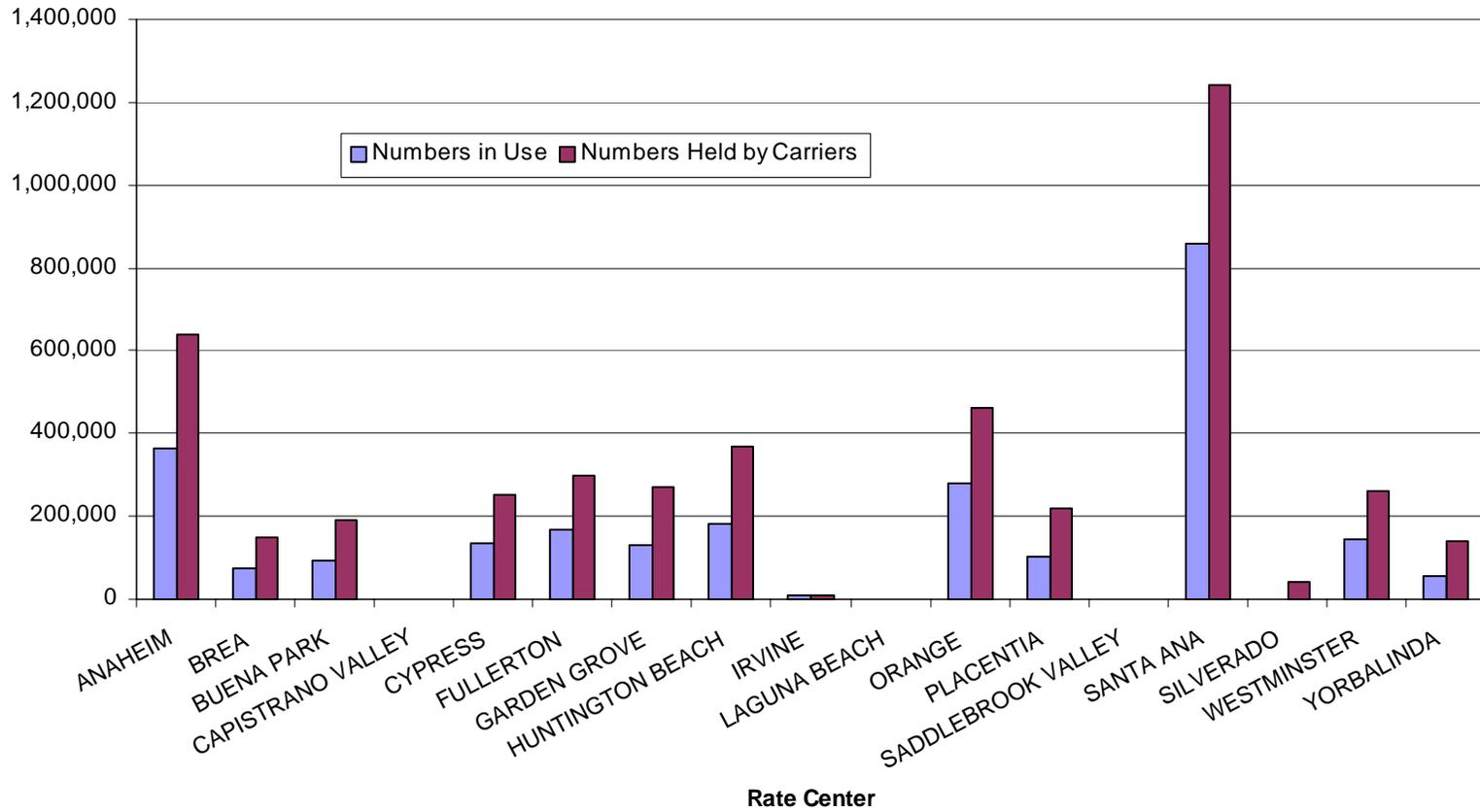
Wireline Carriers' Available Numbers by Contamination Level up to 25% in 714



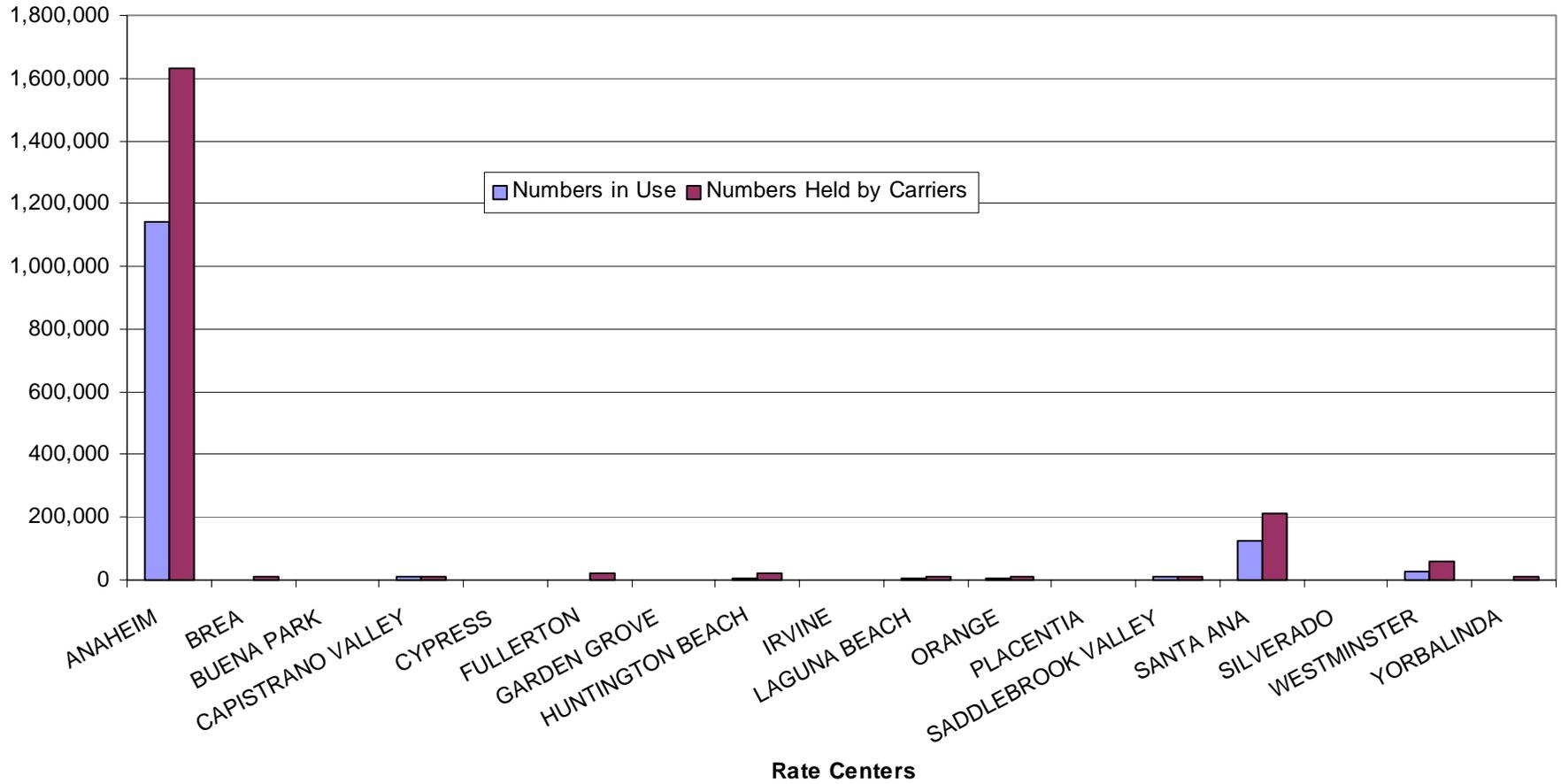
**Appendix B
Table B-4
Telephone Numbers Assigned by Wireline and Wireless Carriers in 714**



Appendix B
Table B-5
Numbers in Use Vs Total Numbers Held by Wireline Carriers in 714



**Appendix B
Table B-6
Numbers in Use Vs Total Numbers Held by Wireless Carriers in 714**



APPENDIX C
SPECIAL USE CODES

NXX	PURPOSE	UNAVAILABLE	AVAILABLE
432	Mobile Radio	8333	1667
433	Mobile Radio	8538	1462
449	Mobile Radio	9763	237
527	Mobile Radio	6898	1329
550	Mobile Radio	8313	1687
555	Directory Assistance	10000	0
561	Emergency Preparedness Service	10000	0
641	Mobile Radio	8227	1773
662	Mobile Radio	8155	1845
755	Mobile Radio	8019	1981
853	Time Service	10000	0
952	Mobile Radio	8098	102
977	High Volume Calling	10	9990

**APPENDIX D
TABLE D-1**

Wireline Reserved Numbers

Rate Center	Number of Wireline Carriers	Assigned to Wireline Carriers	Reserved Numbers
ANAHEIM	21	254,954	27,628
BREA	8	55,653	9,215
BUENA PARK	10	75,608	9,412
CAPISTRANO VALLEY	0	0	0
CYPRESS	9	115,907	12,908
FULLERTON	12	139,835	16,302
GARDEN GROVE	9	93,123	9,588
HUNTINGTON BEACH	18	164,772	2,949
IRVINE	1	10,000	0
LAGUNA BEACH	0	0	0
ORANGE	14	222,646	24,895
PLACENTIA	10	93,839	4,258
SADDLEBROOK VALLEY	0	0	0
SANTA ANA	20	629,486	46,085
SILVERADO	3	1,548	19
WESTMINSTER	10	126,207	1,753
YORBALINDA	7	50,135	3,643
TOTALS		2,033,713	168,655

**APPENDIX D
TABLE D-2**

Wireless Reserved Numbers

Rate Center	Number of Wireless Carriers	Assigned to Wireless Carriers	Reserved Numbers
ANAHEIM	22	937,254	36,071
BREA	1	1,935	0
BUENA PARK	0	0	0
CAPISTRANO VALLEY	1	5,511	2
CYPRESS	0	0	0
FULLERTON	1	640	100
GARDEN GROVE	0	0	0
HUNTINGTON BEACH	2	6,499	0
IRVINE	0	0	0
LAGUNA BEACH	1	4,239	5
ORANGE	1	1,330	0
PLACENTIA	0	0	0
SADDLEBROOK VALLEY	1	9,161	0
SANTA ANA	7	99,869	80
SILVERADO	0	0	0
WESTMINSTER	1	24957	0
YORBALINDA	1	460	100
TOTALS		1,091,855	36,358

**APPENDIX E
TABLE E-1**

Wireline Administrative Numbers

Rate Center	Number of Wireline Carriers	Assigned to Wireline Carriers	Employee/ Official Numbers	Test	Other	Total Admin Numbers
ANAHEIM	21	254,954	3313	2445	1100	6858
BREA	8	55,653	2	810	1	913
BUENA PARK	10	75,608	53	1125	111	1289
CAPISTRANO VALLEY	0	0	0	0	0	0
CYPRESS	9	115,907	52	1091	393	1536
FULLERTON	12	139,835	6	1948	3	1957
GARDEN GROVE	9	93,123	16	1053	3	1072
HUNTINGTON BEACH	18	164,772	2934	956	257	4147
IRVINE	1	10,000	0	0	0	0
LAGUNA BEACH	0	0	0	0	0	0
ORANGE	14	222,646	674	2,059	24	2,757
PLACENTIA	10	93,839	673	1191	178	2042
SADDLEBROOK VALLEY	0	0	0	0	0	0
SANTA ANA	20	629,486	2,239	3,986	325	6,550
SILVERADO	3	1548	0	44	0	44
WESTMINSTER	10	126207	1745	418	10	2173
YORBA LINDA	7	50135	1	725	1	727
TOTALS		2,033,713	11,708	17,851	2,406	26,015

**APPENDIX E
TABLE E-2**

Wireless Administrative Numbers

Rate Center	Number of Wireless Carriers	Assigned to Wireless Carriers	Employee/ Official Numbers	Test	Other	Total Admin Numbers
ANAHEIM	22	937,254	1472	3928	2903	8303
BREA	1	1,935	0	1	0	1
BUENA PARK	0	0	0	0	0	0
CAPISTRANO VALLEY	1	5,511	100	1	229	330
CYPRESS	0	0	0	0	0	0
FULLERTON	1	640	60	4	0	64
GARDEN GROVE	0	0	0	0	0	0
HUNTINGTON BEACH	2	6,499	0	0	0	0
IRVINE	0	0	0	0	0	0
LAGUNA BEACH	1	4,239	100	1	229	330
ORANGE	1	1,330	0	56	0	56
PLACENTIA	0	0	0	0	0	0
SADDLEBROOK VALLEY	1	9,161	9	1	0	10
SANTA ANA	7	99,869	1,139	1,761	4,603	7,503
SILVERADO	0	0	0	0	0	0
WESTMINSTER	1	24957	0	2018	0	2018
YORBALINDA	1	460	80	4	0	84
TOTALS		1,091,855	2,960	7,775	7,964	18,699

**APPENDIX F
TABLE F-1**

Wireline Intermediate Numbers

Rate Center	Number of Wireline Carriers	Assigned to Wireline Carriers	Intermediate Numbers
ANAHEIM	21	254,954	62203
BREA	8	55,653	5000
BUENA PARK	10	75,608	1500
CAPISTRANO VALLEY	0	0	0
CYPRESS	9	115,907	301
FULLERTON	12	139,835	400
GARDEN GROVE	9	93,123	19,601
HUNTINGTON BEACH	18	164,772	5,630
IRVINE	1	10,000	0
LAGUNA BEACH	0	0	0
ORANGE	14	222,646	14,202
PLACENTIA	10	93,839	0
SADDLEBROOK VALLEY	0	0	0
SANTA ANA	20	629,486	139,823
SILVERADO	3	1,548	0
WESTMINSTER	10	126,207	4,530
YORBALINDA	7	50,135	0
TOTALS		2,033,713	288090

**APPENDIX F
TABLE F-2**

Wireless Intermediate Numbers

Rate Center	Number of Wireless Carriers	Assigned to Wireless Carriers	Intermediate Numbers
ANAHEIM	22	937,254	75,216
BREA	1	1,935	0
BUENA PARK	0	0	0
CAPISTRANO VALLEY	1	5,511	3,045
CYPRESS	0	0	0
FULLERTON	1	640	0
GARDEN GROVE	0	0	0
HUNTINGTON BEACH	2	6,499	229
IRVINE	0	0	0
LAGUNA BEACH	1	4,239	3,036
ORANGE	1	1,330	2,475
PLACENTIA	0	0	0
SADDLEBROOK VALLEY	1	9,161	0
SANTA ANA	7	99,869	12,983
SILVERADO	0	0	0
WESTMINSTER	1	24957	51
YORBALINDA	1	460	0
TOTALS		1,091,855	97,035

**APPENDIX G
AGING NUMBERS**

TABLE G-1			
AGING NUMBERS IN THE 714 AREA CODE			
	RESIDENTIAL	BUSINESS	TOTAL
WIRELINE	7,079	116,401	123,480
WIRELESS	39,411	54,836	94,247
TOTAL NUMBERS	46,490	171,237	217,727

**APPENDIX H
TABLE H-1
NUMBER POOLING**

415 Pooling Updates (as of October 1, 2000)

1	2	3	4	5	6
Rate Center	Forecast Blocks by Carriers for 2000 Q3	Blocks Assigned by Pooling Administrator for 2000 Q3	Initial Blocks Forecasted by Carriers Year -to-Date	Blocks Assigned by Pooling Administrator Year -to-Date	Blocks Remaining from Carrier- Donation to the 415 pool
BELVEDERE	3	1	3	1	21
CORTEMADRA	6	4	6	4	35
IGNACIO	6	4	6	4	39
IVERNESS	3	0	3	0	27
MILL VALLEY	6	3	6	3	37
NICASIO	3	0	3	0	21
NOVATO	8	5	8	5	32
POINT REYES	3	0	3	0	25
SAN RAFAEL	6	4	6	4	64
SAUSALITO	5	0	5	0	37
SNFC CNTRL	75	1	75	1	109
SNFC JUNIPER	16	5	16	5	72
SNFC MT-EV	21	3	21	3	69
STNSN-BLNS	3	0	3	0	31
TOTAL	164	30	164	30	619

One Block = 1 thousand numbers

**APPENDIX H
TABLE H-2
NUMBER POOLING**

Pooling Updates (as of December 12, 2000)											
	2000 Q1		2000 Q2		2000 Q3		2000 Q4		Year-to-Date		
NPA	Blocks Forecast by Carriers	Blocks Assigned by Pooling Administrator	Blocks Forecast by Carriers	Blocks Assigned by Pooling Administrator	Blocks Forecast by Carriers	Blocks Assigned by Pooling Administrator	Blocks Forecast by Carriers	Blocks Assigned by Pooling Administrator	Initial Blocks Forecasted by Carriers Year -to-Date	Blocks Assigned by Pooling Administrator Year -to-Date	Blocks Remaining from Carrier-Donation to the 415 pool
310 (pool began 3/18)	225	73	199	29	286	26	198	32	908	160	653
415 (pool began 7/29)					164	30	193	8	357	38	623
714 (pool began 9/29)							224	34	224	34	633
909 (pool began 12/1)							143	19	143	19	996
TOTAL									1632	251	

One Block = 1 thousand numbers

APPENDIX I

SUMMARY OF RECOMMENDATIONS

The Following Contains A Comprehensive List of Recommendations Contained in this Report:

Recommendation for Data Submittal

- *The CPUC should direct the NANPA to withhold issuing prefixes to PageCell, PagePrompt, and Paging Dimensions until the required information is submitted. The CPUC should also consider levying fines or other penalties for failure to comply. If these prefixes are not being used for customers, the CPUC should direct the NANPA to reclaim the prefixes as soon as possible.*

Recommendation from Block Contamination Analysis of Wireline Carriers

- *The CPUC should petition the FCC to increase the contamination level for pooling to 25%. If the FCC grants the petition, the CPUC should increase the maximum contamination level of donated blocks from 10% to 25% for all LNP capable carriers.*

Recommendations from Block Contamination Analysis for Wireless Carriers

- *When cellular and PCS companies become LNP capable in November 2002, the CPUC should direct those wireless carriers to donate to and participate in the pool.*
- *The CPUC should adopt a 25% contamination threshold for donated blocks from wireless carriers to the pool.*
- *The CPUC should solicit comments on the feasibility of paging companies becoming LNP capable and participating in pooling, as well as other methods of reducing the number of stranded numbers held by paging companies.*
- *If deemed feasible, the CPUC should petition the FCC to rescind the paging companies' indefinite exemption on becoming LNP capable.*

Recommendations for Block Contamination Issues Affecting All Companies

- *The CPUC should monitor compliance with its fill rate and sequential numbering policies through future number utilization filings and audits.*
- *The CPUC should establish penalties for non-compliance with fill rate and sequential numbering policies adopted in Decision 00-07-052.⁶⁸*

Recommendations for Treatment of Non-Working Wireless

- *Non-working wireless numbers should be treated as reserved numbers and limited to 180 days, after which they should become available for assignment to customers.*
- *Companies should be required to maintain and update regularly the inventory records of all equipment assigned non-working wireless numbers along with the number assigned, and to submit such records to the CPUC upon request.*
- *The CPUC should continue to monitor non-working wireless numbers in the near term by reviewing future utilization filings, and should include this category of numbers in any audits conducted of wireless carrier number use.*

Recommendations for INP-Related Conservation Measures

- *The CPUC should require companies to transition from INP to LNP in the 714 area code and implement a monitoring mechanism to ensure compliance.*
- *The CPUC should adopt a schedule for transitioning INP arrangements to LNP in all other California area codes.*

Recommendations for Special-Use Prefixes

- *TD recommends that the CPUC initiate an investigation into the possibility of moving the numbers for time and emergency preparedness into the 555 prefix.*
- *TD recommends that the CPUC include in its investigation the broader use of the 555 prefix in California's area codes by*

⁶⁸ See Chapter 1 for the discussion on Decision 00-07-052.

providing standard 555 numbers in every California area code to provide time, emergency preparedness, and weather information.

- *TD recommends that the CPUC require companies to assign numbers sequentially in special use prefixes. Where the numbers are presently assigned randomly, TD recommends that these numbers be moved and consolidated in one thousand-block in order to free more blocks for number pooling.*

Recommendations for Reserved Numbers

- *The CPUC should monitor reserved number use for all companies by reviewing future utilization data to ensure companies are complying with the FCC's 180-day requirement.*
- *The CPUC should adopt efficient number use practices specific to companies' reserved number holdings. In developing these practices, the CPUC should investigate various alternatives including, but not limited to, 1) limits on the quantity or percentage of reserved numbers companies can hold, and 2) requirements for using reserved numbers prior to requesting new numbers.*

Recommendations for Administrative Numbers

- *The CPUC should develop criteria by which companies assign administrative numbers. The CPUC should consider placing a limit on the quantity or percentage of administrative numbers companies are allowed to hold.*
- *The CPUC should develop rules that require companies to limit administrative number assignments within certain blocks in a given prefix. In cases in which companies hold multiple prefixes in a single rate center, the CPUC should develop rules that require companies to limit administrative number assignments within prefixes.*

Recommendation for Intermediate Numbers

- *The CPUC should monitor intermediate number use for all companies by reviewing future utilization filings to test whether potential abuses in this reporting category occur.*

Recommendations for Type 1 numbers:

- *Wireline and wireless carriers should improve Type 1 number inventory management. Wireline carriers should perform an annual inventory check of wireless Type 1 numbers to verify their records match that of the wireless Type 1 carriers' records. Companies should make inventory data available to the CPUC upon request. Wireline carriers should recover and add to their inventories any Type 1 numbers lying dormant.*
- *Type 1 carriers should be subject to number conservation techniques such as sequential numbering and fill rates. A system to ensure compliance with Type 1 number conservation measures should be developed.*
- *The CPUC should consider Type 1 numbers as potential donations to the number pool. Excess and unused Type 1 numbers should be returned to the wireline carriers and either used to serve customers or donated to the number pool.*

Recommendation for Aging Numbers

- *Although the CPUC has required all companies to differentiate aging numbers between residential and business and track the two categories separately, Pacific Bell has not complied with these requirements. Pacific Bell should be redirected to differentiate aging numbers between business and residential, track them separately, and report on each category accurately. The CPUC should assess penalties for failure to comply.*

Recommendation for Audits

- *The CPUC should audit the data submitted by companies in this study and future area codes utilization studies.*

Recommendation for Number Pooling

- *The CPUC should work with industry groups and the Pooling Administrator to develop specific rules for companies pertaining to forecasting a six-month inventory when a number pool is authorized in a particular area code.*

Recommendation for LNP

- *The CPUC should request that non-LNP capable wireline carriers in the 714 area code become LNP capable.*

Recommendations for UNP

- *The CPUC should petition the FCC for authority to implement UNP statewide.*
- *The CPUC should solicit comments in order to develop rules and practices necessary to implement UNP.*

Recommendation for Rate Center Consolidation

- *The CPUC should undertake further investigation by ordering the telecommunications industry to develop a plan, within 180 days, for rate center consolidation.*

Recommendation for Sharing of Prefixes

- *The CPUC should further explore sharing of prefixes as a means to more efficiently utilize numbers in all area codes*